Restoring trust in global FX markets

Striking a balance between transparency and efficiency

speed › price › transparency

LMAX EXCHANGE

About the report

This report has been prepared by LMAX Exchange. In order to demonstrate the complexity and breadth of views in the industry of the international debate around the future of the FX market, LMAX Exchange gathered contributions and quotes from the market experts, some of which appear throughout the report whereas others are outlined in sections titled 'Expert Views'. It should further be highlighted that the conclusions drawn out in the report solely represent the views of LMAX Exchange and do not necessarily represent the industry views of the contributors.

The anonymous survey findings documented in this report reflect solely the views reported to LMAX Exchange by the survey participants. They do not represent opinions or endorsements by LMAX Exchange or its staff or report's contributors. LMAX Exchange compiled the data received from the survey respondents and interpreted the data for presentation purposes in order to produce the summary of the results.

Contents

Foreword

David Mercer
CEO, LMAX Exchange

Transparency has become the buzzword of today's FX market. For the first time, there is both a common agreement – from market makers to regulators – that it is desirable, and there exist technological means to make it happen. Most concur that the market must operate more transparently if it is to regain trust that was lost amid the lurid headlines of the past year.

> ***"FX must accept that transparency comes at a price"***
> *David Mercer, CEO, LMAX Exchange*

But transparency is easier to support in principle than establish in practice; simpler to champion than it is to implement. As the FX industry works to rebuild its historic foundations of efficiency, fairness and self-regulation, it faces the much more complex issue of what can practically be done.

- How can FX become more transparent, without undermining the volume of global trade which depends on this $5.3 trillion/day market?
- How can transparency be enhanced, while ensuring that liquidity is not damaged?

Quite simply, liquidity is the beating heart of the global FX market. Unless the liquidity provider (LP) or market maker can see an economic case to provide it, the liquidity will dry up, harming the end customer and destabilising the market.

Unmitigated, the march towards greater transparency could undermine the economic case for LPs. In recent years, the evolution of the market has put greater pressure on LPs to take more risk to benefit from their liquidity service provision and perhaps the line between market making and proprietary trading became too blurred as a result. This is exactly the sort of grey area which the market would do well to move away from, but that leaves a pressing question: how are LPs to be rewarded for the liquidity they offer?

Foreword

To enjoy the benefits of transparent price discovery and firm liquidity, customers must meet the costs of the service provided. Fair execution must come at a fair price, and transparency cannot come at the cost of destroying liquidity provision.

Over the past 10 years, much has changed in favour of the customer: market access has improved remarkably and, with electronic trading and algo execution increasingly the norm, spreads have compressed and commission has fallen. Thanks to the advent of technology, one could easily argue that there has never been a better time to be a customer.

By contrast, traditional LPs have had to invest heavily in hardware and software to cover their extending global client base. At the same time they have faced ever more sophisticated buy-side customers and smaller, more naturally agile competitors in the realm of liquidity provision. As this report highlights, there is much that LPs can learn from these new entrants, including elements of exchange-style trading that create a fairer trading environment.

The challenge faced by the LPs cannot be ignored, and proposals currently being considered to enhance transparency in the FX market risk disadvantaging them further. Many still argue that trading practices such as 'last look' – where an LP may withdraw their quote after the client order has been received – are necessary to preserve general liquidity. The arguments against 'last look', elaborated in this report, are familiar: that modern technology has made it increasingly obsolete; and that such one-way price optionality is open to abuse, harming trust even if such abuse is perceived rather than real. The market would surely benefit from firm liquidity, priced accordingly, with customers assured of fair execution.

Yet to achieve this, there must be a compensating factor for LPs, de-risking their provision of liquidity and ensuring the market continues to function smoothly. Just as traditional market makers are having to adapt to changing circumstances, so too must customers: accepting that wider spreads, or increased commission fees, is the price that must be paid for firm liquidity and transparent price discovery. Transparency for transparency's sake is not a sustainable path, and the very real concerns of market makers regarding liquidity in a more open market deserve both to be recognised and addressed.

If transparency is to be the common objective of the market in the years ahead – and it undoubtedly should be – then the market as a whole must accept responsibility for delivering it, and shouldering the costs it entails. That means customers must shift their expectations just as market makers adapt their trading practices. Only then can the full benefit of technology be realised to deliver transparency, and fundamentally restore trust, in what is the world's key marketplace for global trade.

David Mercer

LMAX EXCHANGE

Introduction

There can be no doubt that the global FX market is undergoing a period of unprecedented change. Since 2010, the FX market has transformed and become less dealer-centric. Driven by growth in algorithmic execution, non-bank market participants — including hedge funds, smaller non-reporting banks and institutional investors — who grew in volume by 48% between 2010-13, and have become the largest and most active segment in the market.

The FX industry has been transformed into a faster-paced, non-dealer centric and closely interconnected market. Legacy participants within the market are being forced to respond to the change instigated by advances in technology and trading techniques drawn from other asset classes. The banks, who have traditionally dominated the market, are under pressure to keep up with the pace of technology innovation. As the dealer-centric market they once dominated has been disrupted, the provision of liquidity has become more fragmented.

Increasing client sophistication in today's more open and interconnected market has driven new expectations, particularly around increased transparency of price discovery and certainty of execution. FX now faces an environment where scrutiny is fiercer, and the burden of accountability is heavier. In turn, the rate of algorithmic trading has led to concerns about market instability, particularly in terms of liquidity.

The net effect of this change is that FX finds itself at a crossroads. The explosive growth of non-banks in the market, and the rapid advance of new technology, have created pressure on the traditional OTC market structure and legacy trading practices that can no longer be ignored. The only question is how far and how fast the industry is prepared to go.

The big questions

A wide-reaching debate has opened up both within the industry and among regulators on the future of FX market. This report will examine three issues central to that question:

- Will the over-the-counter (OTC) trading model continue to dominate an industry which is increasingly subject to demands for greater accountability and certainty of execution?
- Can the modern technology introduced by recently emerged FX venues enhance transparency in the FX market?
- To what extent can regulation and standardisation of FX market practices improve fairness?

Such questions have been prompted not just by the natural evolution of the FX market, but by the increased regulatory scrutiny. The Fair and Effective Markets Review (FEMR), conducted over the last year by UK regulators, concluded in its final report: "market effectiveness has been impaired. And public trust has been severely damaged." It has recommended the creation of a new global code of conduct for FX, and for market practices that are open to abuse to be reviewed. In turn, international regulators have also been examining how FX can be made fairer and more open. The question of how FX can regain lost trust among its customers looms large.

Introduction

The road ahead

As the fundamentals of the FX market shift, along with the expectations of its end users, the industry agrees that change is needed. "Efficient markets require certainty, risk, transparency, liquidity and innovation," is the view of Alex McDonald, CEO of the Wholesale Markets Brokers' Association (WMBA). The market as a whole now needs to assess what the future trading environment for FX should be, how liquidity can be preserved whilst increasing execution transparency, and what the right balance of regulation looks like.

> ***"Non-bank market participants have grown by 48% and has become the largest, most active segment in the market"***
> *BIS Triennial Central Bank Survey, 2013*

This report will look at how the FX market can and should respond to the challenges it faces, and harness innovative technology to make the industry more open. It highlights changes within the market – from improved technology to new participants and trading practices – that can become an integral part of the market's evolution towards greater fairness and openness.

It further brings together a range of expert opinions from across the industry, exploring changes to the FX landscape, and how a fairer market – according to FEMR's definition of transparency, open access and competition on the basis of merit – can be created. Included within are the results of a market survey of 450 FX industry professionals, the first broad snapshot of sentiment in the market since these issues have come to the fore.

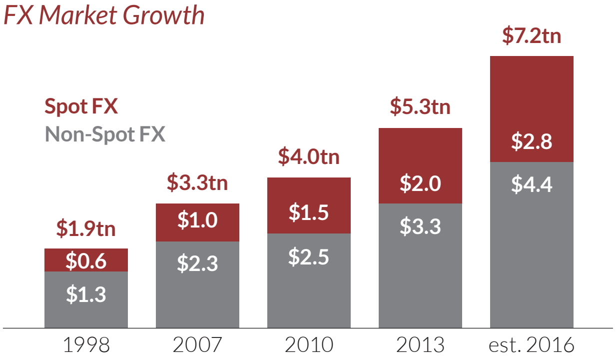
> ***FX faces an environment where scrutiny is fiercer and the burden of accountability is heavier***

The purpose of the report is to capture the breadth of debate within the FX industry about issues which are central to the market's future. The opportunity is there to create an FX market with fairness and openness at its core, and one which continues to underpin global trade.

Introduction

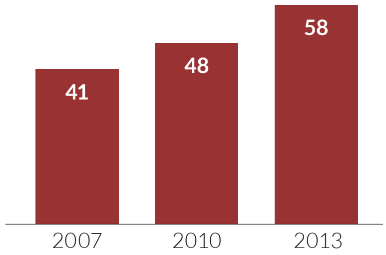
GLOBAL FX MARKET

FX Market Growth



Non-banks: growth in trading

% of Total Spot FX: $2.0tn

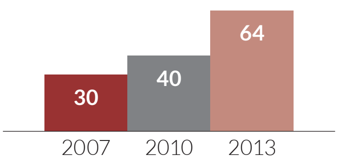


Source: BIS Triennial Central Bank Survey, 2013; LMAX Exchange Internal analysis.

KEY MARKET TRENDS

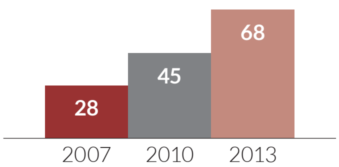
Growth in Electronic Trading

% of Total Spot FX: $2.0tn



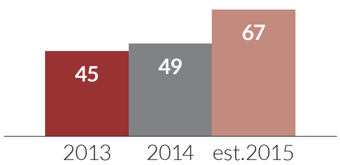
Growth in Algorithmic Trading

% of Total Spot FX: $2.0tn



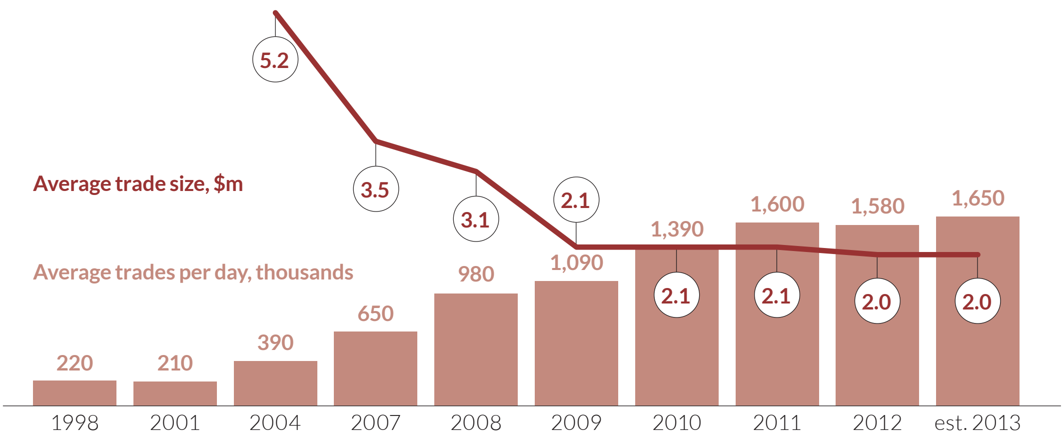
Growth in Multi-dealer Platforms

% of Total FX: $5.3tn



Source: BIS Triennial Central Bank Survey, 2013, FX Week: "Use of multi-dealer FX platforms expected to soar", 2015.

Average trade size decline in Spot FX



Source: Aite Group report 2013, LMAX Exchange Internal analysis

I. Will OTC trading continue to dominate?

I. Will OTC trading continue to dominate?

As the FX market has undergone significant structural change, with the rapid growth of electronic trading, non-bank market participants and exchange-style execution, it has come to face an equally significant structural question. Namely, in a market where the burden of accountability has risen, and technology has made a fairer trading environment possible, can the OTC model continue to dominate?

A new generation of execution venues

This is not a debate which has arisen suddenly. Over the last five years, a new generation of execution venues has emerged, leveraging innovation in technology and the latest regulatory reforms. Challenging the status quo of legacy FX practices, these venues address clients' needs for more transparent price discovery, order-driven execution and a rules-based trading environment.

These newly emerged trading models, such as Multilateral Trading Facilities (MTFs), Swap Execution Facilities (SEFs) and Organised Trading Facilities (OTFs), have brought elements of exchange-style trading into the traditional OTC model. As an example, the MTFs have introduced regulated trading, transparent price discovery, a public rulebook and no 'last look' in the spot FX market. SEFs and OTFs have pushed less liquid FX products (such as NDFs and FX swaps) onto regulated trading facilities with centralised clearing and reporting.

Across the FX market globally, therefore, acceptance of a more standardised trading environment has grown. In parallel, a natural evolution in capital markets has seen traditional exchanges expanding into FX, with BATS recently purchasing Hotspot FX and Deutsche Borse acquiring 360T. While it remains to be seen what these acquisitions will mean for the FX market as a whole, it is clear that some significant bets are being laid in favour of the FX market moving towards more exchange-style trading.

OTC in question

In addition to these underlying shifts in the market, the OTC model has been pushed into the spotlight by a confluence of factors:

- Innovation in technology has enabled change in legacy FX practices, with wider market access, increased fairness and greater efficiency in the market;
- High volatility events, notably the SNB's decision to unpeg the Swiss Franc exchange rate in January 2015, have highlighted the vulnerability of the market to new risk, related to higher and more rapid trading activity. An increasing regulatory focus on venue neutrality, and on the preservation of liquidity, has been the result;
- Recent FX scandals have demonstrated that OTC market practices are open to abuse.

I. Will OTC trading continue to dominate?

The combination of these shocks, and the growing prevalence of alternative trading models in FX, have brought OTC trading into question. With the emergence of new venues, who have introduced elements of exchange-style execution that appeal to clients looking for increased transparency, a starker contrast to OTC has emerged.

> ***"On an exchange model you get firm prices, and that's something the regulators like and understand. I think as the regulators turn over more stones in the FX industry they will say 'wow, I didn't know it worked like that' "***
>
> *David Holcombe, Head of FX Product, Nasdaq*

Illustration: Emergence of exchange trading practices in the FX Market

Key: Indicating level of prevalence

● High ◐ Med ○ Low

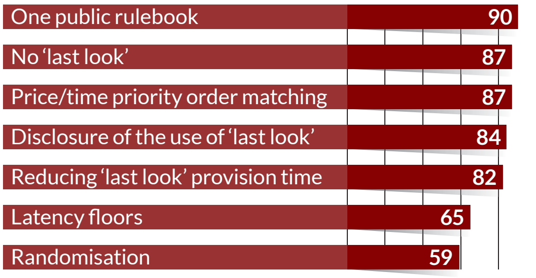
		Exchange-traded asset classes	Pre-2010 OTC – traded FX	2010-2015 OTC – traded FX
Market Structure	Centralised market structure	●	○	◐
	Formal market making requirements	●	○	◐
Trading Practices	Transparent price discovery	●	○	◐
	Firm liquidity/No 'last look'	●	◔	◐
	Anonymous trading	●	◐	◐
	Bi-lateral trading	○	●	◔
	Transaction based fees	●	◔	◐
	Post-trade transparency	●	○	◔
	Centralised clearing	●	○	◔
Regulation/ Standardisation	Rules-based trading environment	●	○	◔
	Formally regulated	●	○	◔

While it seems inconceivable that OTC will be eclipsed as the dominant style of FX trading, it is equally unlikely that it will carry on without changes. The most likely outcome is that it will be altered and become more rules-based, adapting to the changing needs and demands of market participants.

Indeed, in the LMAX Exchange industry survey, respondents strongly supported the benefits of introducing trading practices from the exchange world, and agreed that trading practices prevalent in the OTC marketplace are open to abuse:

Practices to enhance transparency in FX

% of respondents agreed



FX practices open to abuse

% of respondents agreed

> ***"There is already significant structural change ongoing in the FX market and it is inevitable that more FX trading activity will end up in an exchange model"***
>
> *David Holcombe, Global Head of FX product, Nasdaq*

An opportunity for OTC and Exchange trading models to co-exist

As the rapid rise of non-bank market participants has contributed to changed expectations within FX, and the increasing prevalence of exchange-style trading techniques has highlighted shortcomings, the traditional OTC model has come under significant scrutiny. While opinions diverge between those who would like to see a widespread move towards exchange trading, and others who believe standardisation of OTC market practices is preferable, the imperative for change has become unavoidable.

What is likely, therefore, is that OTC trading will continue to be the primary model for FX, but in an evolved form which borrows some practices from exchange trading, and is subject to greater standardisation. At the same time, the growth of exchange-style trading is set to continue, although its influence on existing trading practices may in the short term outpace its overall market acceptance.

> ***"The goal should be having both thriving exchange-traded and OTC markets"***
>
> *Sang Lee, Managing Partner, Aite Group*

In the view of Aite Group Managing Partner Sang Lee, the FX market should embrace such diversity within the trading environment. "I think when you look at other asset classes, in most cases, both exchange traded and OTC markets operate in harmony," he says. "I think the goal should be having both thriving exchange-traded and OTC markets, instead of pushing everything onto an exchange environment."

I. Will OTC trading continue to dominate?

Innovation in FX Execution

- Advances in modern technology, growth in electronic trading and new regulatory frameworks have brought the next wave of competition into the FX market.
- A wide diversity of business models enables multiple formats of trading, ranging from RFQ/RFS on single or multi-dealer platforms, ECNs with streaming quotes and limit order books, or exchange style trading, enabled by MTFs, that supports pre-trade anonymity and full post-trade transparency.

Illustration: Evolution of trading models

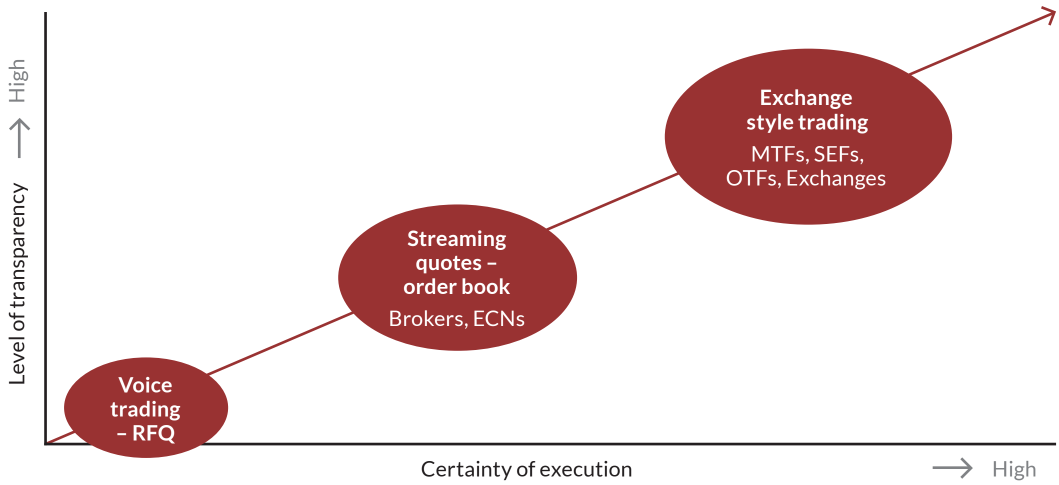
	Single and Multi-Dealer platforms	ECNs	Interbank platforms, MTFs
Price Discovery	RFQ/RFS	Streaming quotes / order book	Open limit order book/ exchange style trading
Liquidity	'Last Look' liquidity	Supports both, firm and last look liquidity pools	Firm liquidity only
Execution	Focus on post trade support and netting	Pre-trade anonymity with limited post-trade transparency	Pre-trade anonymity and post-trade transparency

Emergence of Exchange Style Trading

Trading models enabling exchange style execution offer transparent price discovery, certainty of execution and post-trade transparency. MTFs, SEFs and OTFs are examples of newly emerged regulated trading facilities that bring various elements of exchange trading into FX.

Potential Future Growth Analysis

Source: Aite Group, 'Electronic FX Market 2013: Ready for a Revolution?', 2013



II. Can the use of modern technology enhance transparency in the FX market?

II. Can the use of modern technology enhance transparency in the FX market?

Advances in modern technology have already transformed the way the FX market operates. This has created new ways of trading: platforms that until recently did not exist have reached a much broader range of market participants.

The processing technology now available has allowed for the creation and development of platforms which are more open and transparent. The emergence of MTFs, such as LMAX Exchange, which operates an open order book with streaming firm limit order liquidity, demonstrates how spot FX can be traded without the traditional restrictions on transparency. It also shows how this can be done without creating unpalatable risk for market makers, pricing with no 'last look'.

Yet the full potential of technology in the FX market, already apparent, is yet to be fully realised. This chapter will look at how technology has changed the industry to date, and how it can further enhance fairness and transparency in the FX market.

Bridging the technology gap

One notable benefit of technology has been to help build a healthier, more competitive market. Over the last five years, FX dealing banks have invested significantly in technology in order to keep pace with innovation introduced by non-banks. Having embraced new technology, many banks feel confident about their future.

> ***"Banks will still be there as primary market-makers; they just need to focus on where they take risk, as opposed to the supermarket approach to liquidity"***
>
> *Svante Hedin, Global Head of Electronic Markets, SEB*

The technology arms race that has gripped the FX market in the last five years has shown that innovation can supercharge established as well as emerging venues. On LMAX Exchange, for instance, the top 30 global banks co-exist with leading non-banks as General Members of the MTF, all pricing with no 'last look' only. The same market makers price with 'last look' on other venues.

As LMAX Exchange Head of Analysis Andrew Stewart highlights, banks have largely succeeded in closing the technology divide that briefly existed. By investing in technology to upgrade their market making capabilities, they have caught up rapidly. As a result, technology has empowered many market participants, and spurred innovation across the board, to the ultimate benefit of the end user. Banks' embrace of new trading models is both benefitting them and creating a more transparent, efficient trading environment for their customers.

A fresh approach to FX technology

Technology is also driving the new generation of trading venues, equipping them to be more proactive and responsive to client requirements. As LMAX Exchange CIO Eddy McDaid points out, a flexible software architecture allows new products to be brought to market quicker, and scaled faster according to customer needs. An agile approach to development – bringing the ethos of Internet pioneers such as eBay and Amazon into the financial services sector – ensures continuous improvement and performance quality.

Powered by proprietary, ultra-low latency technology, LMAX Exchange has established Europe's leading MTF for spot FX and introduced no 'last look' exchange style execution to all clients. Driven by the idea that liquid products trade best on exchange, it has enabled market makers, through superior technology, to price more accurately whilst streaming only firm liquidity. Operating an open order book and offering real-time price discovery and pre and post-trade transparency, LMAX Exchange provides a blueprint for exchange-style trading in what has traditionally been an OTC market.

"While several models exist for electronic matching in FX spot, LMAX Exchange is unique with the combination of unthrottled order book, only firm liquidity, and full post-trade name disclosure on the Interbank platform," says Svante Hedin. "The chosen approach is transparent to the point it can be unforgiving to those who cannot keep up – conversely, the speed and efficiency of the platform can create a highly deterministic trading platform for those that do. While the technology implications of that can be significant, the benefits are seen through efficient price discovery and quick turnaround times with corresponding high certainty of execution. I do believe that with several alternative models available to the market, LMAX MTF model fills an important gap, which is 100% complimentary to other existing models."

Technology, therefore, is at the root of more transparent FX trading, though it must be allied to more open trading practices. "Improved technology has certainly been an enabler, but I wouldn't say that technology is driving transparency," is the view of Eddy McDaid. "You need openness for real transparency – an open order book and real prices coming from real orders. Technology makes that possible through speed and quality of execution."

> ***"It's hard to see how you could get transparency without order driven liquidity and that implies an exchange traded model"***
>
> *Eddy McDaid, CIO, LMAX Exchange*

II. Can the use of modern technology enhance transparency in the FX market?

Introduction to LMAX Exchange

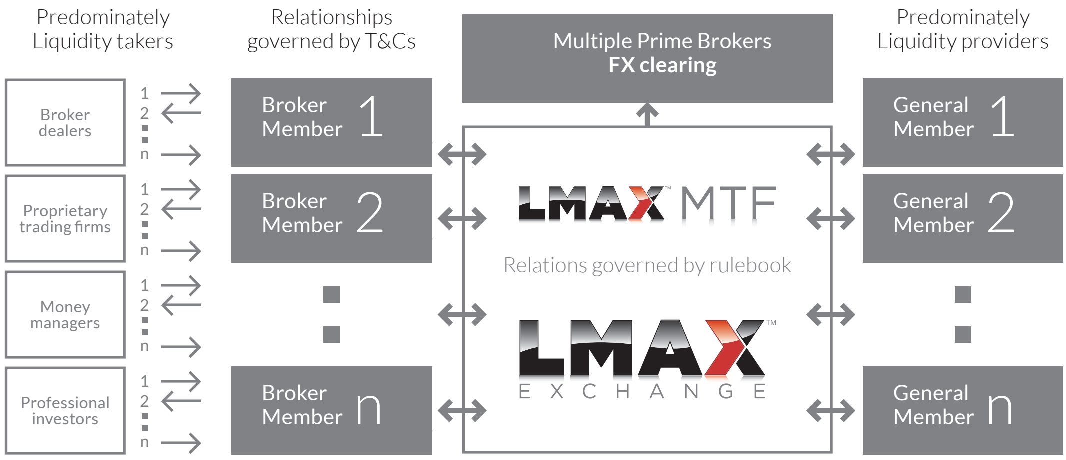
Vision: To lead the industry's transformation towards transparent, consistent and precise execution, level playing field for all market participants and a lower cost of trading.

LMAX Exchange is Europe leading MTF, authorised and regulated by the FCA, for Spot FX. It is the first regulated venue to introduce exchange-style, no 'last look' execution, as standard. Its General Members include 30 major global banks and all major non-bank financial institutions.

The LMAX Exchange business model has been designed to offer:

- Complete transparency: pre and post trade transparency, no 'last look' rejections
- Open Access: one public rulebook with all the rules and charges for exchange members
- Neutral, level playing field for all market participants, regardless of status, size or activity

Illustration: LMAX Exchange execution model



LMAX Exchange is powered by the world's leading technology for FX, with superior risk management tools for market makers, every order timestamped in milliseconds and real-time streaming of market data (up to 20 levels of market depth).

LMAX Exchange – Key Statistics

- MTF latency: under 80 microseconds
- Processing capacity: 40,000 orders/second; 7 million risk calculations/second
- Exchange uptime to date: 100%

II. Can the use of modern technology enhance transparency in the FX market?

Choice and competition

As well as helping create a fairer trading environment, technology has also forged a more inter-connected market in FX, enhancing choice and competition for customers. "Today's market structure involves a more active participation of non-dealing financial institutions in the trading process," the BIS 2013 Triennial Survey commented.

> ***"With more counterparties connected to each other, search costs have decreased and the velocity of trading has increased"***
>
> *BIS Triennial Central Bank Survey, 2013*

This more diverse and connected marketplace is improving choice and competition, though that should be seen as work in progress, according to Jamil Nazarali, Head of Citadel Execution Services at Citadel Securities. "The market structure is evolving towards a model where choice is increasingly important, but both banks and non-bank liquidity providers will be needed to develop a healthy market structure," he says.

> ***"Amazon started out selling just books online and over time they incorporated third-party sellers. We work with the banks like that, and as a result we are seeing a very healthy ecosystem developing"***
>
> *Jamil Nazarali, Head of Citadel Execution Services, Citadel Securities*

'Last look'

Technology has equipped FX venues with significant new capabilities to improve how they operate. At the same time, it has shone an unforgiving light on some legacy trading practices, issues which speak directly to the question of how transparent the FX market can become. Notably, questions are being asked about whether 'last look' still has a place in today's market.

Initially introduced as a pressure gauge for market makers, allowing them to withdraw quotes after receiving the client order, 'last look' has been brought into question by FEMR, which highlighted its potential for abuse. A practice that does not exist in other asset classes, it has become an important symbol for the debate about fairness in the FX market, as a legacy factor that hinders transparency of execution.

> ***"Technology has moved on dramatically, and the same needs and rationalisations for 'last look' are no longer the same"***
>
> *Pat Bartle, Global Head of FX Strategy, LMAX Exchange*

On one level, there is a clear argument that improved technology has made 'last look' obsolete. "The practice of 'last look' was originally driven by the need for the banks that lacked appropriate technology to manage their risk, but with availability to low latency technology infrastructure nowadays, most banks are able to abandon the practice of 'last look' without jeopardising their risk management capabilities," says Aite Group's Sang Lee.

Some industry participants suggest that maintaining 'last look' stands in the way of fairness as it is possible for LPs to use 'last look' as a safety net, which creates uneven competition in the market making space. Some players also believe that abolishing 'last look' would lead to spreads widening out in the short term, but in the long term this would create a fairer market.

'Last look' may also be an impediment to assessing the quality of execution, an increasingly important factor for customers, evidenced by the increasing use of Transaction Cost Analysis (TCA). In the LMAX Exchange industry survey, 81% of respondents said they considered TCA to be a useful analytical tool for assessing best execution. However, 'last look' may hinder TCA effectiveness: "I would say it's harder for customers to prove best execution having to compare 'last look' prices with firm ones," says ITG Director Jim Cochrane.

In a market where maintaining liquidity remains the overriding priority, some industry participants suggest that 'last look' offers necessary protection to major liquidity providers.

Svante Hedin, Global Head of Electronic Markets at SEB, comments: "The implication is that 'last look' in itself is an archaic practice designed to compensate for technology limitations with the market-makers. Even if that was once true, it was never the whole truth. It's important to understand that many market-makers offer liquidity through direct APIs to their clients, which is very convenient for certain clients and scenarios, and where right of refusal is a necessary control mechanism. Otherwise, exposed to potential errors in communications or systems, also within the client itself, what if a client tries to trade off-market on a price that I replaced 30 seconds ago? Or 5 minutes? Or a different notional amount altogether? The strict implication of no right of refusal is that I am obliged to accept the trade anyway. Apart from everything else, compliance and risk control would take great issue with this. Conversely, a broker in the middle can apply enforcing technology to ensure this does not happen, with a process for managing exception cases defined in agreements. So to that end I agree – 'last look' on broker platforms should if not be phased out then certainly closely monitored to ensure it's applied appropriately and only according to industry best practice."

If the actual technology divide between banks and non-banks in FX has been narrowed, attitudes to 'last look' highlight a gap that does still exist in attitudes towards technology: how and to what purpose it should be implemented. The technology to trade efficiently without 'last look' is there, but it is not yet being universally utilised.

Overall, some confusion within the industry about 'last look' still persists. In the LMAX Exchange industry survey, over a fifth of respondents said they were not aware of the practice; and the majority considered it to be 'open to abuse'.

II. Can the use of modern technology enhance transparency in the FX market?

> ***22% not aware of the practice of 'last look'***
> ***73% prefer to trade without 'last look'***
>
> *LMAX Exchange industry survey*

> ***93% of banks think 'last look' is open to abuse***
>
> *LMAX Exchange industry survey*

While there is no immediate prospect of 'last look' being abolished, it appears to be a trading practice that may not exist in a longer term. Sooner or later, the industry will need to respond to the dual pressures of what its customers want and what technology is making possible: open and transparent trading, where the potential for abuse is minimised and the certainty of execution is optimised. A move towards exchange-style trading and abolishing 'last look' are two clear steps that venues can take, both made possible by the rapid advances in technology infrastructure. Before that can happen, the expectations of end-users, currently used to artificially narrow spreads available with 'last look', need to be adjusted - fees will go up (whether as wider spreads or additional commission) if they require added transparency and consistency of execution.

In the meantime, 'last look' will remain an example of how technology has the ability to create a fairer and more open FX market, but has not yet entirely done so. For that to happen, behavioural change is needed from both market makers and their customers.

Technology will level out the playing field

Technology does not just have the potential to transform the FX market: it has already gone a long way doing just that. For the new generation of trading venues, it has delivered the speed and scalability needed to deliver exchange-style execution, and meet rising client expectations. For market makers, it has offered more powerful tools to price accurately and precisely, levelling the playing field with the end user and benefiting the market as a whole.

> ***"You need openness for real transparency – an open order book and real prices coming from real orders"***
>
> *Eddy McDaid, CIO, LMAX Exchange*

Whilst the FX market may not be entirely open and transparent today, there must also be recognition from customers that complete transparency comes at a price. As the debate over 'last look' demonstrates, there is still no consensus in the industry over how this should be met.

III. To what extent can regulation and standardisation of FX market practices improve fairness?

III. To what extent can regulation and standardisation of FX market practices improve fairness?

As the FX market has faced widespread reputational damage in the last two to three years, one issue whose prominence has increased is the self-regulated nature of the FX market and its suitability going forward. The scale and global nature of the FX market make it more difficult to regulate than in the local equity or future markets. In addition, different standards imposed by regulators on a regional level highlight the risk of extraterritoriality and regulatory arbitrage.

FEMR: setting a course

In recent years, both market participants and regulators have been engaged in the review of FX market practices and changes that are needed. To date, FEMR has provided the most detailed market examination of how FX can become fairer and more open. Among its core recommendations was a single code of conduct for the market, to encompass trading practices, standards and dealer behaviour, and enhanced controls and transparency around market practices consistently deemed open to abuse.

FEMR has undoubtedly raised many of the salutary issues around regulation and standardisation for FX. It has set useful principles, which can help guide the market towards more transparent trading practices, where customers can be assured of a fair deal and the potential for abuse by market makers is minimised. The principles and recommendations laid down by FEMR have the potential to become a blueprint for setting new global standards for FX, which can overcome the regional variances in regulation.

The industry's response to FEMR has been largely positive, with praise for the balance it strikes between recognising the need for change in FX, without seeking to push the market further or faster than it is willing to go. "I believe FEMR and its best practice guidelines will provide the FX industry a moral compass to right the ship again, and an opportunity to regain the public trust," is the view of Aite Group senior analyst Howard Tai.

> ***"A correct balance between rules and codes of conduct needs to be re-established"***
>
> *Alex McDonald, CEO, WMBA*

Yet by the necessarily open nature of its conclusions, FEMR has marked the beginning rather than the end of the debate about regulation in FX. It has focused international attention within the market on what regulation should look like, and the question now is how the industry will respond and to what extent the recommendations will be followed through. It remains to be seen whether positive sentiment in favour of a new code of conduct and greater transparency can bring about new terms of trade that help to restore trust in the market.

III. To what extent can regulation and standardisation of FX market practices improve fairness?

The necessity of international regulatory collaboration

If the principles established by FEMR are to be forged into a new regulatory framework for FX, this must happen on a genuinely international footing. For a new truly global code that market participants can agree to across the board, it will require much greater collaboration between national regulators and across the industry worldwide, to ensure that the code acknowledges and responds to the varying concerns of different jurisdictions.

> ***"I see the FEMR efforts as credible UK-driven efforts to restore credibility in the industry, and as part of a wider, global effort by the most important financial regulators to synchronise FX rules and expectations"***
> *Javier Paz, Senior Analyst, Aite Group*

This global approach is needed to bring together the work that has been going on at a national level to tackle the issues around transparency, fairness and effectiveness of FX markets. Major regulators around the world, from The Financial Conduct Authority (FCA) and Bank of England in the UK, to the Commodity Future Trading Commission (CFTC) and Securities and Exchange Commission (SEC) in the US, to the Monetary Authority of Singapore (MAS), have all conducted their own reviews. As a result, there are a series of working groups now developing new codes of conduct, from the FICC Markets Standards Board (FMSB) and Market Practitioner Panel (MPP) in the UK to the CFTC's Subcommittee on Foreign Exchange Markets (FEM) and the BIS Foreign Exchange Working Group (FXWG). What is lacking is a concerted initiative to harmonise these efforts, and ensure that the new regulatory framework is global in scale and application.

The pitfalls of a disconnected approach have already become clear in how national regulators have created different trading facilities for OTC derivatives, which operate under different names and varying terms, from SEFs in the US, to OTFs in Europe and, as of 2016, Recognised Market Operators in Singapore (RMOs).

As an example, the CFTC itself admits that this has created a fragmented and inconsistent environment for swaps trading. "This mismatch between CFTC and European rules may well be the basis down the road for another 'equivalency' standoff similar to the currently prolonged dispute over central counterparty recognition", its Commissioner J. Christopher Giancarlo has said. As this highlights, where regulators act in a disjointed fashion, regulatory arbitrage is the likely result, and progress becomes stilted. If the new regulatory settlement for FX is to avoid that fate, it must be international both in its development and implementation.

Regulators: how powerful should they be?

To date, the FX market has always relied on self-regulation. There is unease, therefore, at the idea that too much regulatory power will be ceded to external parties. Accordingly, some within the industry prefer to stress the importance of restoring codes of conduct, rather than imposing new rules.

III. To what extent can regulation and standardisation of FX market practices improve fairness?

> ***"The rapid development of financial markets and innovation in recent decades resulted in an emphasis on rules rather than principles, and at the expense of observing long standing codes of conduct. A correct balance between rules and codes of conduct needs to be re-established"***
>
> *Alex McDonald, CEO, WMBA*

The opposing contention is whether trust can be restored without more stringent regulatory power, given that the FICC Markets Standards Board (FMSB) (tasked with carrying forward the recommendations of FEMR) will have no formal authority as a regulator. Can new principles and encouragement of the market alone deliver greater fairness and transparency? While in theory a fully empowered regulator could make swifter progress in imposing terms, most agree it would be an uneasy fit with a market that is too large and too global in nature to absorb new unilateral standards without taking a significant hit in performance. FX cannot afford an overly prescriptive regulatory settlement which risks damaging the confidence of market makers and undermining liquidity provision.

As such, it is in the balance between encouragement and sanctions that the right solutions will likely be reached. Among its recommendations for the industry, FEMR proposed the creation of a new statutory civil and criminal market abuse regime for the spot FX market, which previously sat outside the European Commission's market abuse regulation. Tougher sanctions for wrongdoing, already evidenced by the billions of dollars in fines meted out to six banks by the FCA, can provide the behavioural check that ensures adherence to the new global code of conduct and market principles that are being drawn up.

Standardisation of FX market practices

Following the clear guidance issued by FEMR, there is broad consensus that greater common standards are needed in FX markets. However, there remain a broad range of opinions over what that standardisation should look like, and how far it needs to go.

For certain trading practices, there is a clear and compelling case for standardisation that can be easily implemented and will be effective in improving fairness. Examples include:

- ***Communication protocols:*** These currently differ across FX trading venues, and could be brought onto a common footing, while the frequency of pricing updates could also be standardised
- ***Time Stamping:*** There is no good reason why time stamping of orders, which is inconsistently applied at present, could not be mandated across the industry: establishing a consistent for time stamping would be an important step towards improving the availability of trading information and assuring customers of fair, or at least timely execution
- ***Conduct:*** FEMR has called for a new global code of conduct for FX, which is now being taken forward by the industry. To be effective, this must be developed on a truly international basis, and include terms on how information is handled and counterparties treated

III. To what extent can regulation and standardisation of FX market practices improve fairness?

However, the argument is not always so clear cut and attempts to standardise certain trading practices have met with mixed results:

- ***Randomisation/Latency Floors:*** Some venues have trialled and introduced systems designed to even out the speed disparity between market participants, from randomised order execution to 'speed bumps' on arriving orders. However, these practices have received little traction to date: randomisation is generally thought not to improve trading transparency, and removes the certainty and precision in order execution; while latency floors are subjective in nature and raise the difficult question of what the optimal speed delay should be to even out the disparity
- ***'Last Look':*** While the market is increasingly moving towards creating common standards for 'last look', this poses a number of difficulties. Minimum fill rates, for instance, are a difficult standard for venues to apply. Do they sanction a major liquidity provider who falls below the threshold, at the expense of a much smaller one who is above it? What is an appropriate sanction and does it depend on the customer? In the case of 'last look', standardisation may create more problems than it solves

Standardisation of market practices, therefore, is not something which is universally applicable, but which needs to be considered on a case-by-case basis. Only where it is both practical to introduce and beneficial to market fairness should it be pursued.

Following through on FEMR

The size and scope of the FX market makes regulation a particularly complex matter. While the industry accepts that change is inevitable, ultimately that change must be developed and agreed upon within the market, on a global basis. What FEMR and its aftermath represents is an opportunity: to reach a new settlement on market conduct and trading practices, which can go a long way to restoring the trust that has been lost. The principles and guidelines established are moving the market in the right direction, towards greater transparency, openness and standardisation.

> ***Much greater collaboration is needed between regulators on a global level***

What matters now is that the direction of travel established by FEMR is followed and fulfilled to its fullest extent, and that the FX industry takes seriously the responsibility of implementing a new global code to which all market participants can reasonably adhere. Regulators must act internationally and must harness the potential of technology where possible, working alongside both new and long-standing market participants.

For an industry that demands and to some extent necessitates self-regulation, the burden of responsibility is to promote effective change from within. Only then will it be possible to convince customers that the market is as good as its word.

Conclusion: An opportunity to restore trust

The FX industry is facing unprecedented upheaval; a pace of change and a level of challenge that are changing both the shape of the market and the expectations of how it should operate. Yet the shocks to the system the market has endured, and the wide-ranging reviews that are following, represent as much an opportunity as a problem for FX.

The industry now has a chance to demonstrate it takes seriously the concerns of customers that the market is too opaque and does not guarantee fair trading. Moreover, modern technology now offers many of the answers to how FX markets can become more open and transparent: providing information in real time, democratising access to the market and scaling new platforms at speed.

Trust can and will be restored if the FX market responds to the principles that have been outlined by the FEMR inquiry and makes clear moves towards greater transparency. This is a responsibility the market must take, so that new standards are agreed upon that can be implemented globally, and which do not undermine the motivation of market makers to provide liquidity.

The process must be a consultative one, but progress must not be allowed to stall. If the market does not face up to these issues now, it seems inevitable that further troubles, similar to those of the last year, will force a reckoning sooner rather than later. The market would do better to reach solutions now than wait until its hand is forced. If it is to do so successfully, three considerations will be paramount:

I. Preservation of liquidity as key to sustaining a healthy FX eco-system

A balance needs to be struck between increasing transparency of execution for end-users, and protecting liquidity. Efficient global economies need efficient capital markets, and an efficient FX market is a key part of global trade. Liquidity is the core of that efficiency, and its providers need to be incentivised.

Accordingly, steps towards greater transparency – such as removing one-way pricing optionality from LPs – must be counterbalanced to de-risk the provision of firm liquidity and ensure sufficient liquidity for the wider marketplace. That will require customers to adapt their expectations of artificially narrow spreads and accept that higher fees are a price that must be paid for transparency.

II. Importance of harnessing modern technology for accurate measurement of market analytics

To create a fair, level playing field for all market participants, they must be equipped with the means to measure and assess trading activity accurately. By harnessing new technology, market participants can upgrade their technical capabilities with new tools and best practice techniques, including:

- Ultra-low latency technology, which enables market makers to improve their pricing algorithms, measure risk more precisely and price more accurately, resulting in more competitive, efficient liquidity for the whole market
- Real-time market monitoring to mitigate systematic gap risk evidenced by the SNB

Conclusion: An opportunity to restore trust

- Standardised, consistent timestamping in milliseconds, an integral part of post-trade transparency that is necessary to reinstate fairness of execution for end-users
- Transaction Cost Analysis (TCA), based on a central source of FX reference prices, which can be a very powerful tool if it highlights a representative share of the market and compares executable, firm liquidity

The market as a whole, from regulators to LPs and end-users, must embrace the new tools that technology has made possible if a more transparent marketplace is to be created. As the new regulatory committees continue their deliberations, it is essential that they engage with emerging as well as established trading venues, to fully understand the changes in technology and the role it can play in measuring and assessing the FX market.

III. Necessity of international collaboration among regulators

For a global market, there has historically been too little collaboration among regulators. As upcoming reforms are considered, this must change if regulatory arbitrage is to be avoided and the challenge of extraterritoriality averted. Bodies including the CFTC, SEC and the Bank of England must work more closely to ensure the new global code of conduct is enforceable across all jurisdictions. FEMR has gone into most depth as a consultation on the FX market and the blueprint it offers must be pursued on a global basis.

Standardisation of market practices across jurisdictions is another key point, and from definition of products, to the treatment of offshore regulated trading facilities, the classification of counterparties and clearing requirements, a global consistency in definitions and implementation is needed. Likewise, sanctions, personal responsibility and a global code of conduct must be universally consistent and enforceable.

The next few years represent a significant opportunity for FX: to restore trust in the market while consolidating its position as the vital infrastructure underpinning global trade. Enhancing transparency and harnessing innovative technology, without damaging the liquidity or efficiency which have been the market's historic strengths. With the right use of technology, a determinedly global outlook, and an unerring focus on protecting liquidity, the market can become stronger, more sustainable and more suited to the world of its significantly diversified participants.

LMAX Exchange: Anonymous market survey

FX Market Survey

To support its investigation into the future of the FX market, LMAX Exchange conducted a survey to obtain a representative view from industry participants on the transparency and fairness of FX market practices.

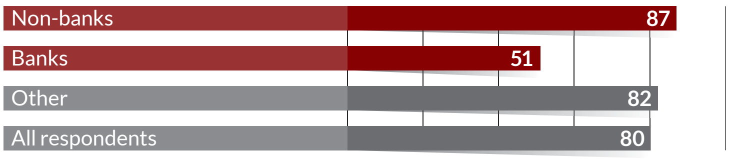
Key findings

1. Fairness and transparency

On the overall question of whether the FX market needs to be more transparent, there was both a majority in support, and a clear divergence in the views of bank and non-banks. Across all the respondents there was a broad agreement that FX needs to become more transparent. An overwhelming majority among non-banks were supportive of the need for more transparency.

Need for increased transparency in FX

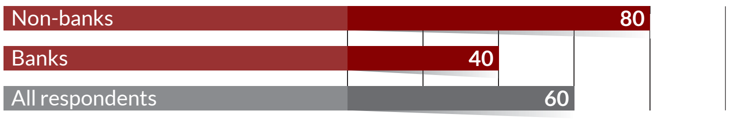
% of respondents agreed



Mixed views were expressed about the need for a global code of conduct; a significant majority of non-banks were supportive of introducing a global code.

Need for a global code of conduct in FX

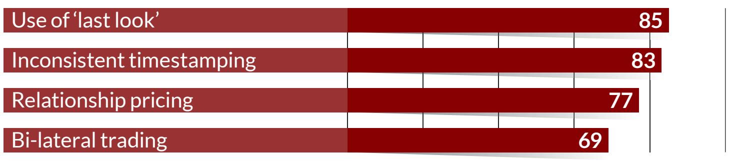
% of respondents agreed



Consensus was indicated about the following FX practices to be open to abuse: the use of 'last look', inconsistent timestamping, relationship pricing and bi-lateral trading.

FX practices open to abuse

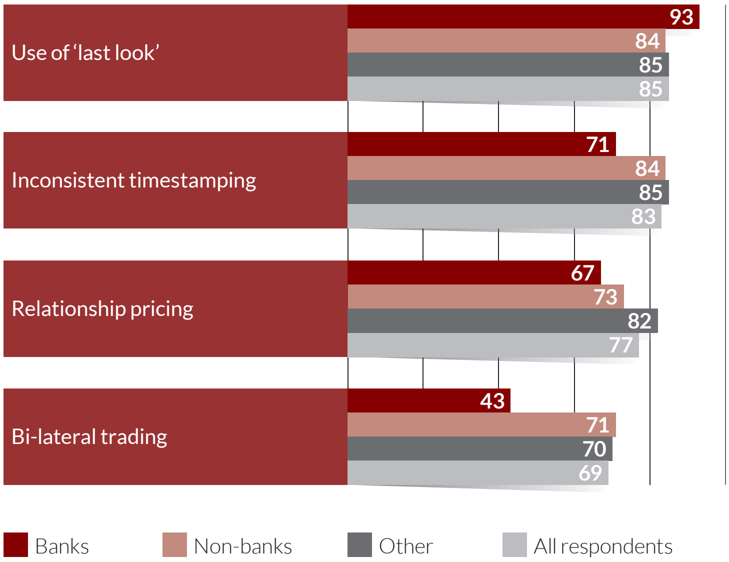
% of respondents agreed



The analysis of the results by segment revealed some divergence in views. Banks indicated the strongest support that 'last look' is open to abuse. At the same time, banks expressed mixed views, relative to other segments, that both relationship pricing and bi-lateral trading are open to abuse.

By segment: FX practices open to abuse

% of respondents agreed



Qualitative feedback from some respondents indicated concern over **loss of client trust.**

> ***"Everything can be manipulated by market makers"***
>
> *Asset manager*

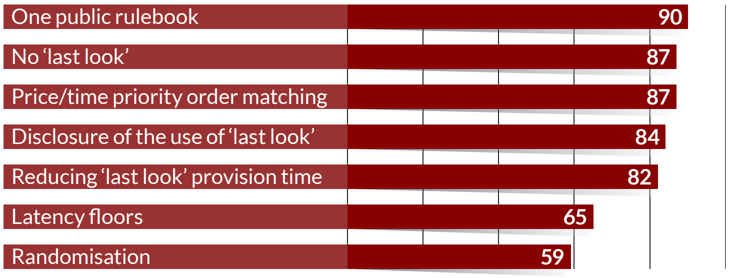
> ***"There are dubious brokers who will pull any and every trick to relieve the punter of his money. However they are very few in number and generally do not have any longevity"***
>
> *Industry participant*

> ***"No one should be able to manipulate the prices of client orders. If this is the case, then I should be able to alter my orders after trade closure to ensure I always get profitable trades"***
>
> *Industry participant*

Widespread agreement was indicated that market practices drawn from exchange trading, such as 'one public rulebook', no 'last look' and 'price/time priority order matching' could increase transparency.

Practices to enhance transparency in FX

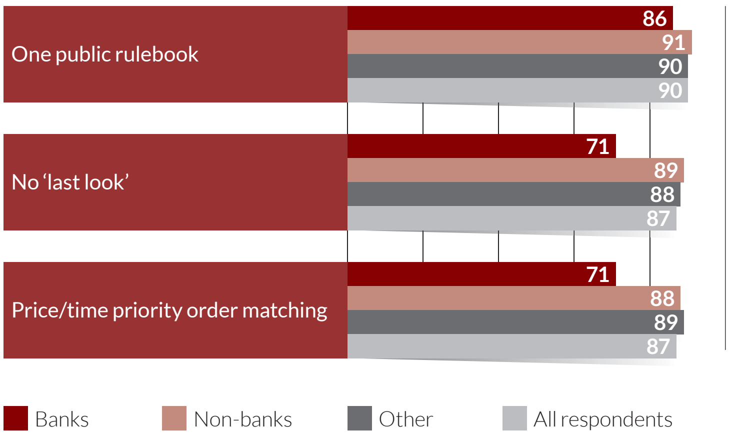
% of respondents agreed



The analysis of the results by segment revealed some divergence in views among banks, as they indicated that the top priority for enhancing transparency is the introduction of 'one public rulebook'.

By segment: increasing transparency in FX

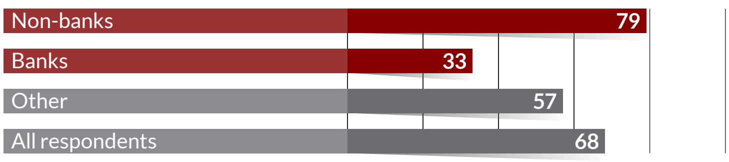
% of respondents agreed



Strong support for the 'one public rulebook' was counterbalanced by disagreement over whether FX should be traded on exchange.

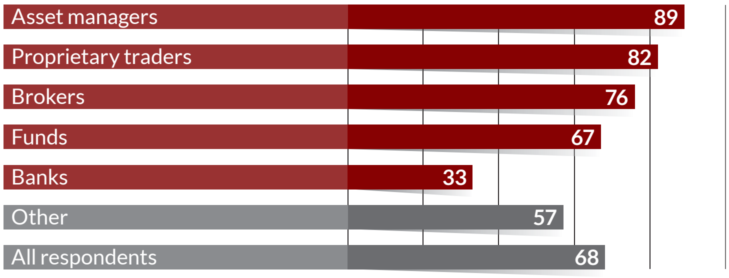
Should FX be traded on exchange?

% of respondents agreed



The analysis of the results by segment revealed the strongest support among asset managers and the lowest among the banks.

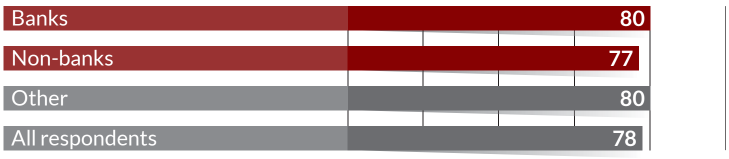
By segment: should FX be traded on exchange?
% of respondents agreed



2. 'Last look'

Over a fifth of institutional traders were not aware of 'last look'.

Level of market awareness of 'last look'
% of respondents aware



Among those aware of the practice, most agreed that its one-way optionality was unfair.

Is it unfair for LPs to have optionality to withdraw quotes?
% of respondents agreed

Furthermore a majority said they would prefer to trade without 'last look'.

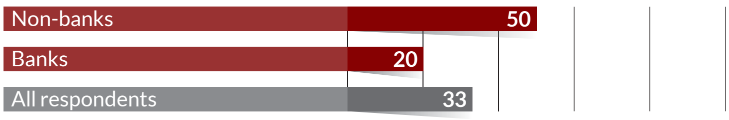
By segment: preference to trade on no 'last look' prices

% of respondents agreed

However, most disagreed that technology has made 'last look' obsolete, and there was no consensus on whether it should be abolished.

Modern technology has eliminated the need for 'last look'

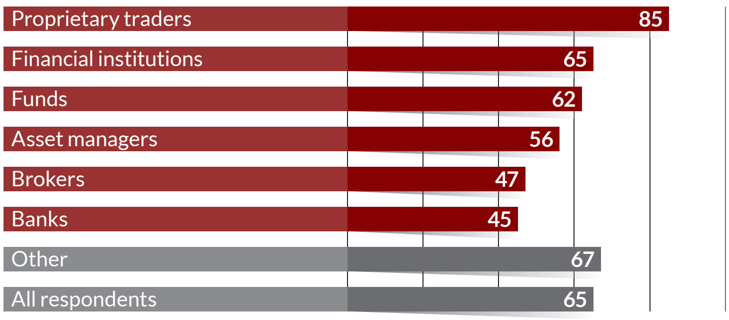
% of respondents agreed



Although bank respondents indicated a preference to trade with no 'last look', they are reluctant to abolish the practise.

By segment: 'Last look' should be abolished

% of respondents agreed

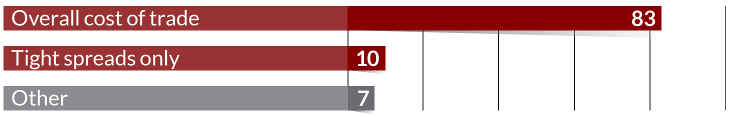


3. Best execution

For the vast majority, overall cost of trade (transparent price discovery, no 'last look' execution and post-trade transparency) mattered more in assessing best execution than a tight spread.

What does best execution mean for your business?

% of respondents agreed



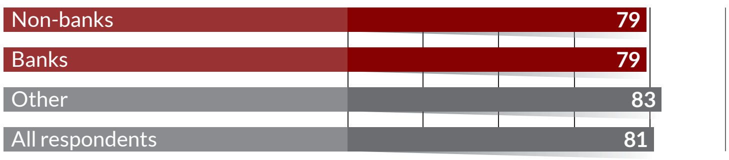
By segment: importance of overall cost of trade

% of respondents agreed

There was a similarly broad consensus on the utility of TCA in assessing best execution.

TCA is a useful tool to access best execution

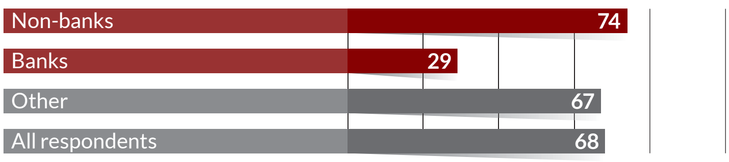
% of respondents agreed



By contrast, there was some disagreement on whether FX would benefit from a single source of reference price for the industry.

FX market would benefit from a single source of reference price

% of respondents agreed



Summary of survey results

Taken as a whole, the results of the survey suggest a widespread sentiment in the market that change is needed, but show only limited agreement on how FX market practices need to change. Questions about generic issues elicited broader support than those which explored attitudes to specific changes: while 80% said they thought the market should be more transparent, only 60% agreed with the idea of a global code of conduct; 85% of respondents considered 'last look' to be open to abuse, but only 65% thought it should be abolished outright.

What these results may imply is that the industry is nearer shared recognition about the problems that exist than resolution about what decisions to take. That would be explained by the relatively recent origins of this debate, arising out of trends that have been reshaping the market over the last five years. That over a fifth of respondents were unaware of 'last look', and that some respondents — notably asset managers — suggested they did not understand the correlation between 'last look' and higher total cost of trading, highlights that greater education in the market may be needed as this debate continues.

If the survey is at all indicative of industry sentiment, it suggests that FEMR has focused minds within the FX market about challenges it must overcome. What is not yet clear is a shared consensus on where the market goes next.

Methodology

- A survey was distributed to institutional industry participants, receiving 450 responses, ranging from top-tier banks to brokers and funds
- In the above analysis, the respondents have been grouped into three categories:
  - **Banks**: dealing and non-dealing banks
  - **Non-banks**: asset managers, brokers, financial institutions, funds and proprietary traders
  - **Other industry participants**: industry experts and technology providers

Expert views: The future of global FX market

Expert View: Fairness and Transparency

Contributor: Aite Group

Sang Lee
Managing Partner,
Aite Group

Javier Paz
Senior Analyst,
Aite Group

Howard Tai
Senior Analyst,
Aite Group

What's your view on transparency in the FX market?

Sang Lee: Traditionally in the FX, and more broadly in the entire OTC market, transparency has not been an important part of typical transactions. This is not to say that the dealers are taking advantage of customers but the essential nature of OTC, in which complex, at times customised bilateral transactions take place, anonymity and discreetness have been valued more in the past than transparency. Increased liquidity and adoption of electronic trading have certainly changed this view over the last 15 years or so.

> ***"A vulnerability in FX markets is the lack of transparency and clear protocol governing trade execution during times of high market volatility"***

Javier Paz: The arbitrary, unstructured use of 'last look' casts a long shadow over the transparency and fairness of FX markets today. One party, the market maker, can at its own discretion determine whether it will exercise this right enshrined in bilateral arrangements, something that, if not explicitly understood and agreed upon by the clients, could be seen as unfair. Having said that, not everything that lacks transparency to public or third-party purview is necessarily unfair, such as bespoke pricing negotiated at arm's length between a bank and its client.

Does the FX market need to be more transparent?

Sang Lee: I don't know if I would say the FX market needs to become more transparent as I view it as a natural evolution of any market that experiences increased liquidity, electronification, and competition. I think the starting point for any push towards transparency is transparency in pricing and from there firms need to focus on disclosing how customer orders are handled with accurate time stamping, level of risk management in place, and defining best execution from their perspective, etc. One thing to note here is that with the

Contributor: Aite Group (cont'd)

adoption of advanced technologies over the years, transparency in the market continues to improve as more and more market participants gain easier access to information and technology to efficiently participate in the global FX market.

Javier Paz: The level of transparency in FX markets has increased sharply over the past five to seven years, but the case for more clarity being needed has merits. Since 2008, regulators have implemented regular stress tests to verify the readiness of banks to withstand adverse market conditions to their loan portfolios and capital markets activities. The stress testing done today is generally delegated to banks and does not cover many of the potential technical problems that can and have crippled at least two major non-bank market participants in recent years.

> ***"The level of transparency in FX markets has increased sharply over the past five to seven years"***

While there was no material disruption in the case of these two firms, the fact that two large and experienced firms suffered these kinds of crippling technology problems should give pause that many other firms could have technical vulnerabilities and capital insufficiency that together could cast a long shadow over the market's microstructure in times of collective stress.

How does the lack of common standards for trading practices highlight vulnerability of the FX market during high volatility events?

Javier Paz: A vulnerability in FX markets is the lack of transparency and clear protocol governing trade execution during times of high market volatility – i.e., the issue of who gets filled first and at what price and for what volume. Following major economic announcements (unexpected changes in monetary policy, labor statistics, price levels, economic vitality) or important political events (vote outcomes, assassinations, war), markets adjust to an acute shortage of FX liquidity that could last from a few minutes to much longer. Subsequently, FX prices skip their normal linear trajectory and limit orders and/or margin calls are routinely executed at prices far removed from what the client expects.

For example, during the first few minutes following the SNB crisis of January 2015, the price of EUR/CHF temporarily dropped from 1.20 to 0.80 (or lower, depending on the broker) before rebounding an hour later closer to EUR/CHF1.03. Following these events, clients long EUR/CHF asked why their trades were stopped out at the most adverse price (close 0.80) when minutes later it was available close to EUR/CHF1.00. Since there was not a reliable benchmark price to serve as basis for the EUR/CHF0.80 execution, the executing parties exercised their own discretion and policies for when and at what price to execute that client's trade. Regulators would do well to motivate the industry to introduce a protocol for executing trades

cont'd

Contributor: Aite Group (cont'd)

in a fair and transparent manner, possibly capping or delaying trade executions, while giving the client viable and fair options of how such trade executions would be handled if/when extreme conditions arise.

Can the standardisation of FX practices enhance transparency?

Sang Lee: From electronic trading perspectives communication protocols across the different trading venues could certainly be standardised as well as frequency of pricing updates that occur on each venue. From a market-wide perspective, standardised industry-wide benchmark to replace WM/R fixing would go a long way in repairing some of the damage that has been done to public perception of the global FX market.

> ***"Firms need to focus on disclosing how customer orders are handled... and on defining best execution from their perspective"***

Howard Tai: Synchronisation of the practice of time stamping of orders and trades, while creating an effective mechanism for establishing consistent standards on time stamping around the globe would be ideal. Secondly, there should be a single global FX code of conduct, providing a comprehensive set of principles to govern trading practices around market integrity, information handling, treatment of counterparties and standards for trading venues. International code of conduct coordination efforts being undertaken by major central banks between now and 2017 are major steps in the right direction.

Expert View: Fairness and Transparency

Contributor: Wholesale Markets Brokers' Association (WMBA)

David Clark
Chairman,
WMBA

Alex McDonald
CEO,
WMBA

Does FX trading need to become more transparent?

WMBA believes that FX market does not need to be more transparent. In rather exhaustive studies and interviews by an array of market and public authorities undertaken since the 2009 crisis, both as part of the regulatory repair process and more recently under the FEMR banner, market participants have widely affirmed that wholesale FICC markets are transparent and presented to them in a lucid and functional way.

Concisely, whilst market users have stated that they have adequate visibility as to what pricing is available, they would clearly like more such liquidity to be available and would readily be willing to forego this transparency for more utility. Investors have been vocal in observing no value in viewing a market where they cannot get transactions done.

> ***"Transparency means different things to different onlookers"***

FX markets themselves are an end-member on the transparency continuum and therefore somewhat different to more bespoke and balance intensive products. The concerns within FX have been centred on the rebadging of prices to form a liquidity mirage where balance sheet and capital are not actually present to underpin the quantity of prices advertised.

Caveats have been applied noting problems with market depth, liquidity and fragmentation. These concerns have also been particularly widely held with regard where constraints around capital and liquidity have this impinged upon the fluidity of collateral where unsecured balance sheets cannot stand behind the prices offered.

We believe transparency means different things to different onlookers, and there are two additional elements of market transparency to consider:

cont'd

Contributor: Wholesale Markets Brokers' Association (WMBA) (cont'd)

- The need for central banks to observe the build-up of positions in order to make judgements about the risks to FX and interest rates;
- And the need for regulators to assess the amount of capital and liquidity required to sustain the risks to individual firms.

Both of these can only realistically be attained through comprehensive trade reporting.

Does the FX market need a global code of conduct?

Markets serve trade, and trade is global. Therefore, the most pressing need is to establish globally agreed standards of conduct and market practice which can be seamlessly implemented by firms and supervised by regulators. The rapid development of financial markets and innovation in recent decades resulted in an emphasis on rules rather than principles, and at the expense of observing long standing codes of conduct. A correct balance between rules and codes of conduct needs to be re-established.

- The FX market will always be a hybrid of OTC and exchange traded products. It is axiomatic that ET products are standardised, but markets do not depend on standardised FX products;
- The FX market is seeking standardisation of its codes of conduct, both in terms of scope and global reach. The agreed 'global preamble' set out at the annual meeting of the Central Banks' FX Committees earlier this year, sets that process into motion. The widespread adoption of firstly the ACI Model Code and also the agreed FEMR path forward, will cement these tools into the trading infrastructure. Such codes will set out how time stamps and similar widely used practices can be deemed appropriate, particularly with regards to the building of trade reports and commensurate repositories.

WMBA believes that there are four elements to incorporate into the wider use of codes of conduct:

- Especially for FICC markets, the codes must be capable of being ***used and observed globally***. This means that they should be proposed and led by Central Banks and/or the FSB using trade bodies and other institutions to advise, promote and recommend on the implementation of codes in individual markets and firms;
- High level principles should focus on ***individual conduct and behaviour*** and the way in which firms can use codes to incentivise good conduct and punish bad conduct. The fundamental target should be individual integrity;
- ***Standards and best practice*** which apply to specific markets or products, and which there is a general agreement to adhere to; and
- ***Market conventions*** relating to specific incidents or market events.

Contributor: ITG

Jim Cochrane
Director, FX Senior Product Manager,
ITG

Foreign exchange market transparency issues still exist after over a decade of electronic trading and price aggregation. Fifteen years ago the price in the market was whatever the trader on the other end of the phone said it was. Now price discovery is automated to what the liquidity providers are streaming to your trading platform. However, that price is not guaranteed on 'last look' platforms and is therefore subject to change. Additionally, you have no idea if you are receiving the best possible spread in the market for the particular currency pair you are trading. You only know that you executed with the liquidity provider offering the best top-of-book price. In an OTC world, true prices are difficult to obtain and define. Foreign Exchange Transaction Cost Analysis (FX TCA) can help with these issues.

Until recently, caveat emptor, or buyer beware, was an appropriate headline for FX trading. With increased regulatory scrutiny and client pressure, it is not so simple. Strong buy side trading desks have always been aware of the pitfalls in OTC trading and managed them expertly. Regardless of their expertise, institutional investors now need to prove that their trading strategies and tactics are producing results that fulfill best execution requirements. So, is the pricing, even on the fastest, most competitive trading platform, clear and reliable? How can you prove best execution in your FX transactions without a central exchange, inaccurate timestamps and a lack of trusted benchmarks?

> ***"Unless the pricing stream is no 'last look', the tradable quotes that create any liquidity pool can be misleading"***

Due to these market structure limitations, FX TCA is still in early stages, as compared to the equities, where institutional investors have employed TCA as a tool to measure execution quality for at least 20 years. This said, FX TCA has made significant progress over the last couple of years and is set to become increasingly more important as institutional investors face pressure to fulfill 'best execution' obligations in FX.

cont'd

Contributor: ITG (cont'd)

FX TCA sheds light on your transaction costs by comparing your execution rate with prices available in a wider pool of liquidity than you can access. Additionally, some of the more advanced products now increase transparency in ways not initially contemplated by market participants. With the advent of aggregated price streams, FX TCA advanced beyond basic compliance metrics and estimates of the daily weighted average price. First rate analytical products now offer pre-trade as well as sophisticated post-trade analysis that can capture details in trade patterns, spread and volatility that are extremely useful to market participants. In a time of heightened regulatory scrutiny and client demand for proof of efficient trading, these tools are vital for proof of best execution. The most important component of these tools is data: copious and comprehensive data.

> ***"FX TCA has made significant progress over the last couple of years and is set to becoming increasingly important"***

Ironically, foreign exchange transparency issues sometimes now arise from too much data rather than not enough data. Without a centralised exchange, liquidity providers produce several pricing streams, customising trade quotes for each client segment and each execution venue. Additionally, the quotes that are sent to an aggregator or a multi-dealer platform can contain shadow liquidity, stale quotes and duplicate quotes. Unless the pricing stream is no 'last look', the tradable quotes that create any liquidity pool can be misleading unless culled for excess and erroneous pricing, and managed to reflect market conditions. What was once opaque for a lack of data is now still considered opaque or misleading because there is too much data that cannot be confirmed as real pricing.

> ***"A guaranteed spread is valuable in analytics. It provides a transparent baseline against which to measure expected vs. actual trading performance"***

Consider a perfect liquidity pool for the institutional investor in today's FX market. Some of the inputs would be interbank market-makers, industry-leading multi-dealer platforms, and direct feeds from global institutions with a neutral spread (i.e., not meant for high frequency or retail trading). Among the multi-dealer platforms, it would also be helpful to distinguish between no 'last look' and 'last look' liquidity. A guaranteed spread, as opposed to a tighter, but not certain spread, is valuable in analytics. It provides a transparent baseline against which to measure expected vs. actual trading performance. The perfect data set would analyse hundreds of millions of tradable quotes and trillions of dollars in total volume daily. It would answer all of the questions posed by an OTC market and provide keen insight into trading costs for currency pairs at any time of day and in any size.

Contributor: ITG (cont'd)

Without this perfect database, the best and logical step is to build a representative database that includes all possible sources against which to analyse actual executions. The important thing to do is to apply advanced quantitative financial engineering and focus on process improvement.

Expertise in managing data and statistical analysis can create transparency where some see only cloud and fog. For example, checking the performance of actual trades against the cost curves created from aggregated pricing streams allows advanced systems to estimate future spreads. These spreads can then be used to calculate expected costs in every market condition. Actual performance against calculated cost curves provides a solid basis for cost trend analysis. Out of the confusion of too much data, it is possible to make sense of the chaos and catch what other systems might miss.

> ***"The next phase of FX TCA is likely to emerge with the creation of the industry-wide single source of 'best price' and with more transparency around FX market practices"***

Multi-dealer platforms and liquidity aggregation have removed some of the murkiness surrounding risk transfer prices. If the liquidity pool that is used to evaluate trading is deep enough, and actual executions can be measured against calculated expectations, then it is possible to transcend transparency issues and drive transaction costs towards zero. Using advanced FX TCA tools, a firm can then progress to driving implementation shortfall costs to zero and, ultimately, to use market characteristics to add alpha. This is the mindset that has provided the means for more experienced FX TCA teams to create FX pre-trade tools and cost curves that will provide a useful signal for tactical execution and superior trend analysis in a post-trade review. Even in an imperfect data environment, FX TCA can provide powerful insights to manage trading costs and implement powerful trading strategies.

In order to reduce transaction costs, you must discover which venue and strategies will consistently offer the best prices under all scenarios and provide the proper trading tools to achieve best execution and process improvement. With a market that openly offers different prices for the same commodity, we believe that FX TCA can help institutional investors decide on venue and trading strategy. The next phase of FX TCA is likely to emerge with the creation of the industry-wide single source of 'best price' and with more transparency around FX market practices.

Contributor: Nasdaq

David Holcombe
Global Head of FX Product, Nasdaq
Board Member, FXPA

How do you see the FX trading models evolve in the near future?

There is already significant structural change ongoing in the FX market and it is inevitable that more FX trading activity will end up in an exchange model. As well as regulation mandating highly transparent and regulated venues, we are already seeing shifts of market making appetite and ability into non-traditional market makers well suited to products that are traded electronically in critical mass, and we see banks increasingly proving the viability of retaining and serving important client relationships through an agency offering that complements the bank's risk pricing. All of those big themes of change within the FX market play out well in an exchange model.

> ***"It is inevitable that more FX trading activity will end up in an exchange model"***

What is your view on the use of 'last look'?

In the pioneer days of electronic FX trading we used 'last look' as one safeguard against clients who were focused on tech arbitrage against our feed, and this optionality in order flow has absolutely been baked into the DNA of the FX market. 'Last look' is certainly coming under regulatory scrutiny now though, and we should expect mandates to constrain it to activities and products that warrant it. However, we are also already seeing voluntary changes to preemptively reduce the chance for abuse of 'last look', such as FX venues making moves to diminish the 'last look' window or incentivising participants to leave orders in the book. The FX market is in transition right now, and the current landscape is fertile ground for ongoing structural change. So for commoditised and electronically traded products within the FX portfolio, even without a regulatory constraint we expect to see the increased adoption of viable business models that don't rely on 'last look' to succeed, and this will be a healthy development for the FX market.

Expert View: Innovative Technology

Contributor: Aite Group

Has innovation in technology enabled more transparency in FX market practices?

Sang Lee: There is no doubt that technology innovation has enabled (or driven) transparency in FX market. For example, the practice of 'last look' was originally driven by the need for the banks that lacked appropriate technology to manage their risk, but with availability to low latency technology infrastructure nowadays, most banks are able to abandon the practice of 'last look' without jeopardising their risk management capabilities.

> ***"Technology innovation has enabled transparency in the FX market"***

Javier Paz: A simple but important advance in FX trading technology is the broad availability of FX price aggregation technology, something that allows various market participants greater and faster visibility to discover prevailing prices. The concentration of FX trading infrastructure around a few select trading ecosystems (e.g., Equinix data centres in NY4, LD4, TY3) has allowed market participants to measure price transparency on a near real-time basis. Advances in fast big data are also giving regulators and various sell-side departments the tools to probe deeper and faster into areas of potential concern.

What is your view on the evolution of FX trading models? Is FX trading on exchange style platforms more transparent?

Sang Lee: I think when you look at other asset classes, in most cases, both exchange traded and OTC markets operate in harmony. I think the goal should be having both thriving exchange-traded and OTC markets, instead of pushing everything onto an exchange environment. Having said that, clearly, when it comes to more standardised, highly liquid products such as spot FX or NDFs, those platforms that support exchange-style trading, such as MTFs, are well positioned to play a central role in continual growth. LMAX Exchange is one of the few platforms in the FX market that has taken aggressive steps in this direction.

Howard Tai: I believe certain FX instruments are better suited for the exchange style's central limit order book with its corresponding level of transparency, provided there is a much better way of handling the intermediation of counterparty credit risk. While other FX instruments, given its complexity and relatively lower level of liquidity, are continued to be better served by the OTC markets model.

Javier Paz: I find it revealing that despite the availability of FX products offered through global exchanges for decades, the vast majority of trading activity continues to be executed on an OTC basis. There is a role for exchanges in FX, although so far the market seems to indicate that exchanges shouldn't occupy a predominant role.

Contributor: LMAX Exchange

Eddy McDaid
CIO,
LMAX Exchange

At LMAX Exchange, technology has always been the enabler for a clear business need and agenda: a transparent, neutral, level playing field for all market participants. To achieve that level of transparency, you need openness – an open order book and real prices coming from real orders – and we believe that requires an exchange traded model. Exchanges offer much higher quality market data and represent the true state of the underlying market in a way that a quote-driven system with artificially tight spreads never will.

> ***"For the exchange model to work, low latency and high capacity are essential"***

For the exchange model to work, low latency and high capacity are essential: we have invested a lot in low latency technology to create a venue with an internal latency of a few hundred microseconds. Without low latency technology that allows you to process trades reliably, the market makers would be unable to reflect market movements quickly enough for exchanges to function with tight prices. Capacity is equally important; low latency is easy to achieve if you only have a few orders to process, so ensuring the model is scalable is a prerequisite.

At LMAX Exchange, we work to deliver scalable capacity and low latency through a unique software architecture and components, underpinned by a world class team of technologists. Our approach is focused on delivering flexibility, scale and speed to market for new exchanges.

We have adopted a single-threaded, asynchronous message-driven service-oriented architecture based on reliable UDP multicast communication between components. All software components in the LMAX Exchange architecture are event driven and operate by exchanging messages asynchronously and reliably. Messages can be buffered for very short periods to smooth out spikes in message rates and the same message can be distributed to any number of receiving components with no additional overhead. Business information on latency sensitive paths is retained in memory, replicated and journalled to files rather than being stored in a database.

Contributor: LMAX Exchange (cont'd)

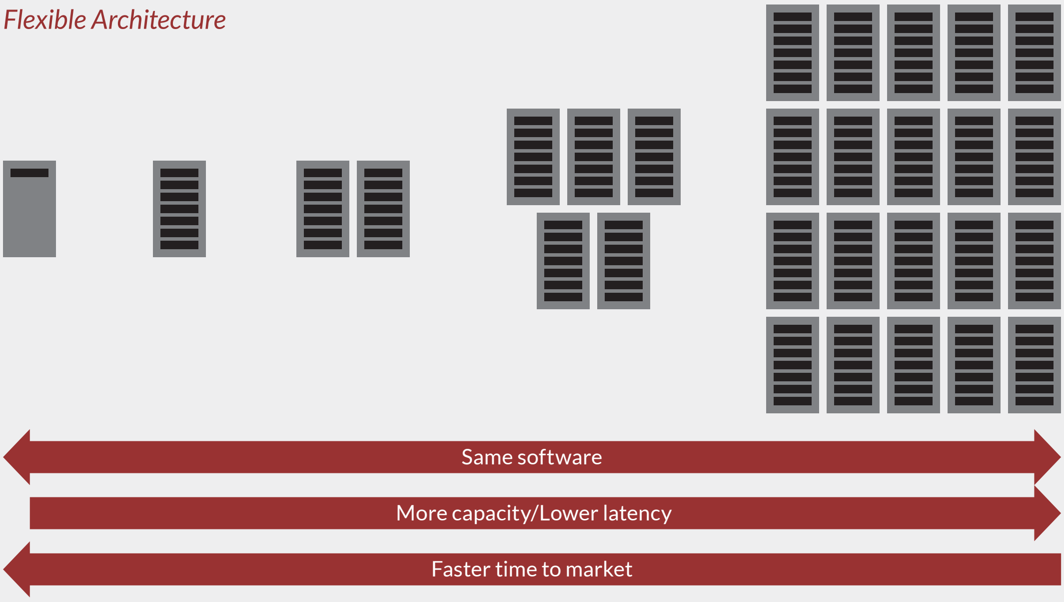
At the heart of our model is the principle of simplicity. The most impactful, scalable, deliverable and maintainable solutions are often also the simplest. We have built our platform from the ground up, with relatively few third party components. Our business logic is single threaded and does not use complicated enterprise level software frameworks, simplifying the design, development, deployment and operation of software at all levels. That accelerates the process of software development and allows us to bring new models to market quicker.

It also gives us the flexibility to deploy business services in a wide variety of combinations and configurations, meeting different requirements. In order to deliver maximum performance and capacity, services can be deployed on separate physical devices. Some services can also be scaled horizontally by having multiple instances of a given service on separate nodes. At the other extreme, all LMAX Exchange software can be run on a single box if necessary and this approach is often used in our development and testing where we need to have many complete copies of the whole exchange running in parallel.

This means that new venues and global instances of existing venues can start small and scale as needed. A few racks is often all you need to achieve good performance with modest capacity requirements. As a new venue takes off providing additional capacity is simply a matter of adding more hardware. This allows us to achieve very rapid time to market for new business opportunities and initiatives for a modest investment.

Speed, simplicity and flexibility are therefore at the heart of the LMAX Exchange approach to developing technology that underpins our exchange model. Our agile software architecture can respond to different needs, scale up capacity according to demand and bring new models to market at pace. Such a level of technological investment is needed to ensure the low latency and high capacity that the exchange model requires.

Flexible Architecture



Expert View: Innovative Technology

Contributor: LMAX Exchange

Andrew Stewart
Head of Analysis,
LMAX Exchange

Until a few years ago, non-bank liquidity providers were believed to have superior market making capabilities than the banks. Based on the selected LMAX Exchange trade data, this case study demonstrates that the technology divide no longer exists between the banks and non-banks, and some banks have developed superior execution capabilities and are able to compete on equal terms with non-banks.

> ***"The technology divide no longer exists between the banks and non-banks"***

Methodology:

In order to trade in an open order book, liquidity providers compete on both price and time for client trades. This is a reflection not only of the price/time priority matching in the order book, but also of the fact that the first movers in response to a market event are able to make the most out of the client activity that occurs around that price change.

Finding a way of observing this competition is challenging. A liquidity provider's price will be a reflection of both the perceived market price and their own instantaneous position biasing them towards buying or selling, so a simple price comparison is often uninformative. Comparison by time is more tractable; market events typically affect all liquidity providers and provide us with a means of comparing them in terms of their speed to react. Unfortunately with prices updating thousands or tens of thousands of times a second, and not every market event necessarily creating a dramatic price change, deciding exactly which price update is each participant's response to the same event can become highly subjective.

However, a number of other major FX venues update their prices at very predictable frequencies, and participants on LMAX Exchange whose strategies include a response to these events that is statistically discernible – i.e. their price stream consistently includes

Contributor: LMAX Exchange (cont'd)

corresponding peaks in the number of price updates – can be more readily compared in terms of their reaction times.

Analysis:

The charts below compare the reaction of a number of LMAX Exchange liquidity providers, both banks and non-banks, to the 100ms market data update published by another venue. After publication the members race to be the first to respond, and the charts represent this race by producing histograms of the number of price updates in the first 36ms of each 100ms period over a number of hours. The y-axis on the chart is scaled for all participants such that a value of 1 represents the millisecond interval in which that participant submitted the highest number of price updates.

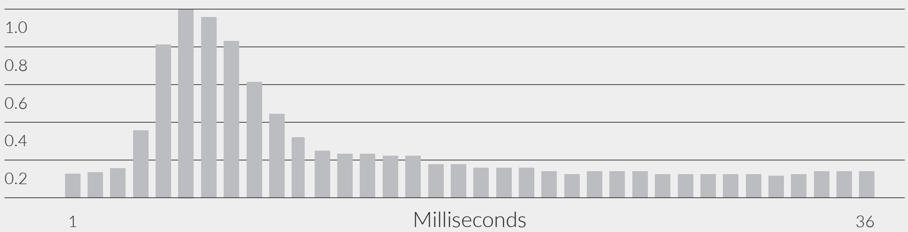
Findings:

The first set of charts uses data from a continuous two hour period of active trading in EUR/USD from March 2014.

The *All* data series shows the performance of all participants in aggregate. The peak at 6ms shows a propensity for the market as a whole to consistently react in a distribution peaking at 6ms into each 100ms. While we have no guarantee that every price placed in these intervals is a response to the same event, the distortion of the overall pricing activity towards these 100ms peaks – not to mention the anecdotal evidence of our own participants – support the use of this methodology to indicate relative reaction speed.

All

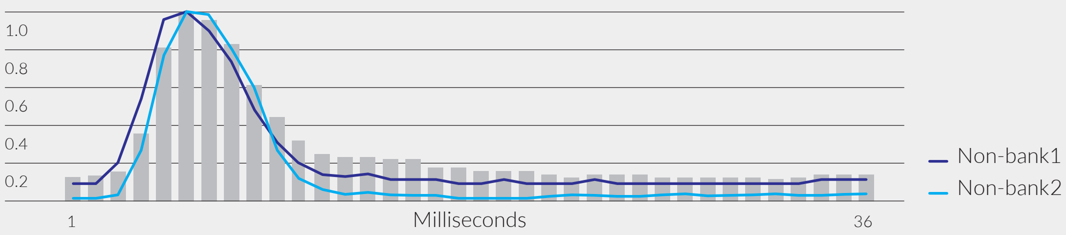
Pricing frequency



Adding the corresponding charts for two of the individual members, *Non-bank1* and *Non-bank2*, we can see how they compare to the market as a whole.

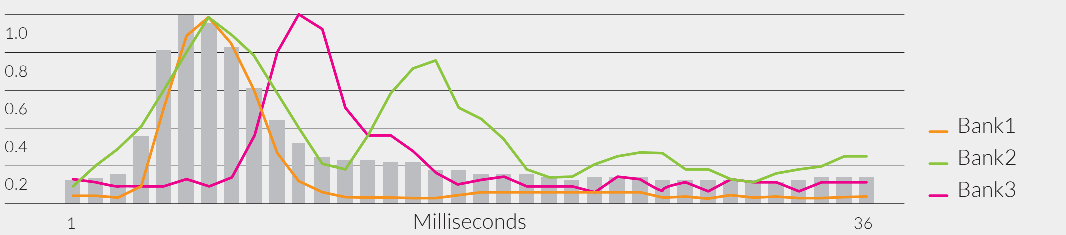
cont'd

Contributor: LMAX Exchange (cont'd)



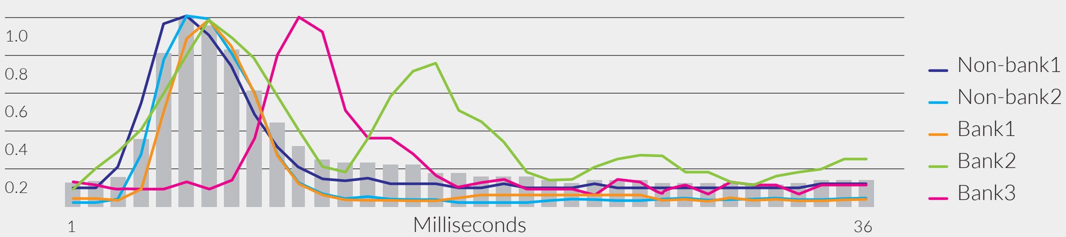
We can see from the comparative distributions that *Non-bank1* is actually slightly faster to react, while *Non-bank2* is more consistent if slightly slower – their distribution of price updates is skewed to the right of *Non-bank1* but the peak is narrower with a far lower proportion of events coming outside the market peak.

The next chart shows a number of bank liquidity providers for the same period.



Comparing the pricing from bank members, the behaviour is much less consistent. *Bank1's* profile is similar to the non-banks, although lagging slightly in overall speed. *Bank2* shows a bi-modal distribution which may suggest a different signal for the later peak or a relatively consistent systemic delay. Even ignoring the second peak their initial peak shows much less consistency in pricing (wider distribution). *Bank3* shows a single peak but a 5-6ms delay compared to the rest of the market.

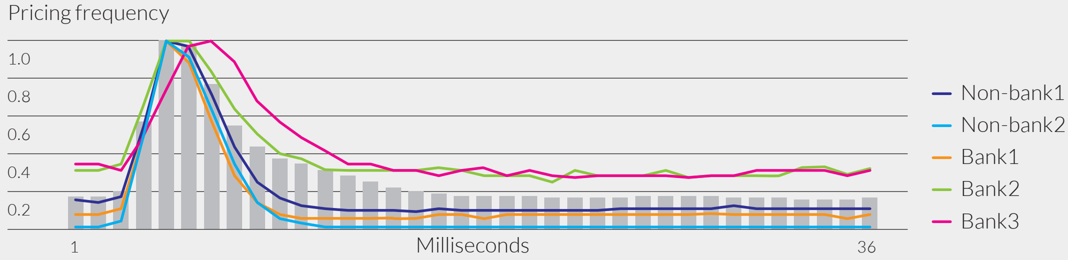
The chart below shows all the data series on a single chart for a more direct comparison.



Contributor: LMAX Exchange (cont'd)

Each of the banks in these studies approached LMAX Exchange because they found pricing our liquidity pool more challenging than they had anticipated. Pricing on LMAX Exchange had highlighted a competitive weakness that had been masked by non-real time and 'last look' order books.

The final chart shows the same analysis for the same participants for a continuous four hour trading period in EUR/USD from June 2015.



Bank1 is now on a par with the non-banks, while *Bank2* is close in terms of speed but less consistent. *Bank3*, although also less consistently fast than its competitors has reduced their lead from 5-6ms to 1-2ms. In each case the Banks have been able to reduce the technology gap that is perceived as a barrier to free competition in Foreign Exchange.

Expert View: Innovative Technology

Contributor: SEB

Svante Hedin
Global Head of Electronic Markets, SEB

As a bank and a market maker, how are you harnessing the innovation in technology (e.g., lower trading costs, improve transparency, to compete in execution capabilities)?

Our business is always to service our clients, as such clearly technology is a means to an end, albeit an increasingly important one. Not only in the sense of offering electronic products directly to clients, but also as an enabler to find efficiencies and scale up our business beyond what was traditionally possible. Conversely, those market-makers that underinvest and/or lack consistent technology strategy will increasingly find themselves unable to compete.

It's an interesting time. FX markets continues to evolve towards being faster and even more transparent, while characterised by scarce liquidity overall, and periods of low volatility in between sudden sharp moves. It is putting market-makers to the test like perhaps never before and there will be winners and losers in this. Technology, while being far from the only component does play a large part, and ultimately increased transparency in the market should benefit quality market-makers.

Can you comment on the benefits that LMAX Exchange technology brings to the market (e.g., creating a more transparent, level playing field for market participants, more accurate pricing, low latency execution etc)?

While several models exist for electronic matching in FX spot, LMAX Exchange is unique with the combination of unthrottled order book, only firm liquidity, and full post-trade name disclosure on the Interbank platform. The chosen approach is transparent to the point it can be unforgiving to those who cannot keep up – conversely, the speed and efficiency of the platform can create a highly deterministic trading platform for those that do. While the technology implications of that can be significant, the benefits are seen through efficient price discovery and quick turnaround times with corresponding high certainty of execution. I do believe that with several alternative models available to the market, LMAX MTF model fills an important gap, which is 100% complimentary to other existing models.

Expert View: Innovative Technology

Contributor: LMAX Exchange

Eddy McDaid
CIO, LMAX Exchange

Developing the technology infrastructure for FX trading is a continuous and never-ending process. At LMAX Exchange, we have a large and diverse technology team, many of whom don't come from a financial services background, and bring ideas and expertise from other low latency, web scale and big data environments. To build and sustain technology infrastructure you need great talent, but just as important is the process and mindset.

> ***"The secret weapon is our agile software development process"***

We believe the secret weapon is our mature, agile software development process. LMAX Exchange was an early adopter of agile in financial services and we have had a significant influence on the development of agile processes across the whole software development industry.

A core tenant of agile development is that the software technology and business teams must work closely together. This close collaboration between business and IT works because we all speak the same language and there is a huge amount of trust and understanding. It means that the technology is shaped around and supports the driving business need: in our case for a transparent, open trading platform with equal access to all market participants.

- The agile approach extends to the way our technology team is structured. We are self-organising and do not have project managers. The team is open and actively shares knowledge and ideas. Much of our code is produced by developers working in pairs. This helps to ensure that the code is better designed and has fewer defects. It also promotes knowledge sharing. Similarly, every member of each development team works on the same feature, with daily rotation between pairs and also frequent rotation between teams.

Such an approach means we can avoid silos and anyone can work on any part of the platform. We also share externally and are very open about much of our core intellectual property. Key software components such as the LMAX Disruptor have been made freely available as open source. We believe openness is also about being open-minded and are always willing to adopt good ideas wherever they come from.

- Agile development is primarily an iterative process and we structure our development around two week iterations, in which software teams will work on features identified for development, which we define as user stories. Every fortnight we also release new software into all production environments. Much of this release process is automated and as such requires little additional overhead.

cont'd

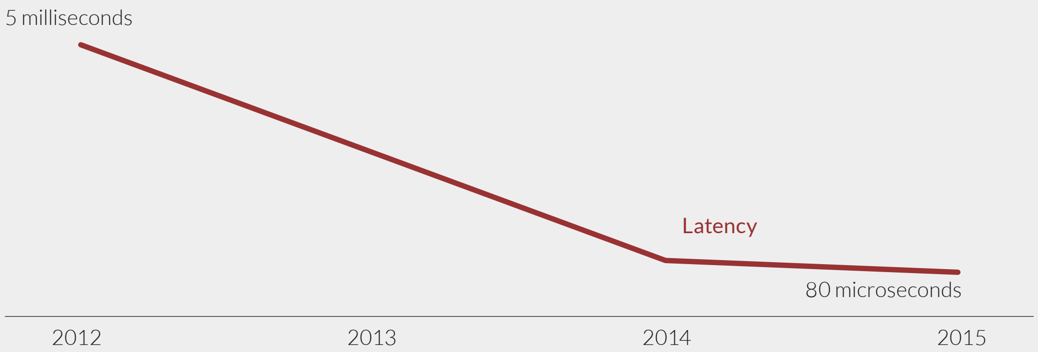
Expert View: Innovative Technology

Contributor: LMAX Exchange (cont'd)

- Underpinning the agile development process is a test-driven approach, that involves the creation of comprehensive automated software tests before the development of functional code commences. As a result, we have an extensive automated regression test suite level of confidence in our code at all times and provides a safety net that allows us to move at speed.
- Overall, our agile development practices, including automated testing, pairing and frequent releases have ensured exceptionally low defect levels in the software. That underpins our belief that the way software is developed and the environment surrounding development teams can be as important as the people who are building it.

LMAX Exchange Latency

Source: LMAX Exchange Internal analysis



Expert View: Regulation and Standardisation

Contributor: Aite Group

Sang Lee
Managing Partner, Aite Group

Javier Paz
Senior Analyst, Aite Group

Howard Tai
Senior Analyst, Aite Group

What is your view on FEMR's potential implications for the FX industry?

Sang Lee: I think this is another layer of regulatory discussions that will help (or push, depending on one's perspective) the FX market to take appropriate measures to ensure transparency, providing a stronger foundation for the continued growth of FX as a legitimate asset class.

> ***"FEMR will provide the FX industry a moral compass to right the ship and regain public trust"***

Howard Tai: For an industry that once prided itself on self-regulation but has sailed in stormy waters in recent years, as a result of several highly publicised scandals that have damaged its reputation, I believe FEMR and its best practices guidelines will provide the FX industry with a moral compass to right the ship again, and an opportunity to regain the public trust in this vast global marketplace.

Javier Paz: I see the FEMR efforts as credible UK-driven efforts to restore credibility in the industry, and part of a wider, global effort by the most important financial regulators to synchronise FX rules and expectations. The FEMR efforts are likely to set the tone for most other jurisdictions in terms of precise implementation of the global framework outlined by major central banks in their update to Codes of Best Market Practice for foreign exchange markets in March 2015. The overall impact will likely be positive and needed, although there are not negligible risks that regulators at large are introducing new risks through fairly aggressive policing of capital markets, such as creating regulations that take away the incentive for banks to make markets in FX or to offer credit via prime brokerage activities.

FEMR review highlights 'last look' as one of the FX practices open to abuse, what is CFTC's stance on the use of 'last look'?

Javier Paz: To my knowledge, the CFTC has not pronounced itself on this issue very overtly, but I would characterise the CFTC position as one of uneasy laissez faire, with a preference for breaking the trade if it can't be executed at or better terms as what was requested by the client.

Howard Tai: To the best of my knowledge, CFTC has not issued any public opinion on its stance of the practice of 'last look' in FX, although its senior officials have repeatedly given verbal support to the FEMR's review calling for industry wide resolution of this practice. Furthermore, FEMR's review has questioned the viability of 'last look' in FX as an acceptable

cont'd

Contributor: Aite Group (cont'd)

form of market practice. In light of the vast improvements in trading technology achieved over the recent years, which have largely mitigated the risk of 'latency arbitrage' that were used primarily by predatory players in the past, it's high time the industry practitioners and global regulators come to a definitive resolution on whether 'last look' should still be permitted as a market practice going forward.

What questions do the ongoing regulatory proposals and reforms pose for the FX market?

Sang Lee: The Dodd-Frank Act, EMIR, MiFID II and other similar regulatory reforms all paved the way for the transition to the changing market dynamics that are ushering in the next phase of OTC to exchange-style trading and centralised clearing. This transformative movement poses the next challenge – for all market participants and the execution venues to demonstrate that they are following the principle of achieving "best execution."

What is best execution in FX?

Sang Lee: This is not an easy question to answer and I would think the definition of best execution would differ depending on the market participant. Some may focus more on obtaining fair pricing, but many others may opt for speed of execution, while a third group may value the certainty of execution and settlement of trades. Until the industry itself moves towards defining a market-wide acceptable industry benchmark, coming up with a good definition of FX would be difficult.

Javier Paz: Best execution remains by and large in the eye of the beholder. In a strict though not universally applicable sense, it can be seen as a client trade request getting filled near instantaneously at or better terms as those requested, based on the prevailing liquidity at the time and the order flow of the executing institution/venue and within the credit and marketplace access constraints of the client. Looking at the current OTC FX market and its fragmented venues and credit relationships, the best execution to a trade for a client could lie at a trade venue to which it has no access or through a liquidity provider with whom it has no credit relationship. Furthermore, liquidity at any particular price point and time stamp is a scarce commodity, yet many in the market mistakenly assume that FX liquidity is available steadily through a linear price continuum.

Contributor: WMBA

David Clark
Chairman, WMBA

Alex McDonald
CEO, WMBA

What should regulators address in their review of the FX market?

The rapid development of financial markets and innovation in recent decades resulted in an emphasis on rules rather than principles, and at the expense of observing long standing codes of conduct. A correct balance between rules and codes of conduct needs to be re-established.

> ***"A correct balance between rules and codes of conduct needs to be re-established"***

WMBA believes there are ***three key elements*** of market microstructure to be addressed:

- Changes in rules on ***capital and liquidity*** through the migration of Basel II to Basel III. This work should be agreed between regulators and Central Banks on a global basis with national authorities being allowed to use the rules to fit their own financial and broader economic infrastructure and characteristics;
- *Conduct and behaviour* of institutions and individuals is becoming subject to much stricter rules and enforcement. This should continue to be the remit of national regulators taking into account consumer interests and existing laws; and
- Increasing use of ***trading platforms and technology*** to improve pre and post-trade transparency and enable better risk management. Technology vendors, competition between market participants and client demand are the driving forces behind the improvements being seen.

Regulators and supervisors should focus on the first two of these issues, leaving market participants to deliver the platforms and technology required to meet supervisory and regulatory change.

These changes in market microstructure are also ***changing financial institutions' business models***. In particular, banks have reduced their market making capabilities in response to rules concerning proprietary trading and the capital and liquidity costs of maintaining positions. As regulators and firms continue to address the issue of serious misconduct, bank trading rooms are adjusting by very rigorous surveillance of trading activity which often requires judgements to be made about the risk reward benefits of entering into a specific trade. This is having a negative impact on liquidity as the incentive to trade is impaired.

cont'd

Contributor: WMBA (cont'd)

Does the FX market require higher degree of standardisation?

The FX market as a whole is seeking standardisation of both its technology and in the codes of conduct. It wants to lower costs for a business which is essentially global and therefore seeks to embrace all the tools which can mitigate regional fragmentation and open access. These are clearly topped by cross border recognition and open post-trade affirmation systems. Prima Pares in this process therefore is the widespread adoption and continued expansion of CLS which mitigates the need for CCP Clearing and collateral transformations.

What is WMBA's view on the use of 'last look'?

'Last look' is the practice of market makers rejecting a trade on a price that it has made after a very short time of receiving an order. They may do this because of credit limit reasons or operational risk events resulting from latency or timing differences. 'Last look' does facilitate narrower spreads between bid and offer rates and permits better risk management for the market maker.

'Last look' can be used unfairly to the disadvantage of clients and counterparties when market makers stand aside from trading on a bid or offer that they have made with the intention of price discovery rather than market making, or rejecting trades that they can only close out with a loss.

Although improvements in technology and the reduction in latency of price dissemination reduce the opportunity for misuse of 'last look', tensions still persist between market makers and counterparties. WMBA believes that these can be significantly reduced by the use of agreed ***Market Standards and Codes of Conduct*** as laid out in our FEMR consultation response. These would be evidenced in the exchange of documentation making the market fairer for the client whilst encouraging efficiencies in market making and providing narrower spreads for the Dealer bank.

What is the future of 'last look'? Should it be abolished?

'Last Look' should not be abolished. This said, the FEMR project established that the time has come for 'Last Look' to be concisely defined because it has come to hold many different meanings for a dispersed set of market users.

Clearly a choice of execution venues and methods needs to be offered to market participants in order to uphold the basic principles of competition and future proofing. Therefore concepts of 'abolishing' need to be replaced by those of inclusion, recognition and empowerment. This outcome has been made all the more urgent by the constriction of liquidity not only by fragmentation, but also by the rationing of risk, capital and collateral.

Contributor: WMBA (cont'd)

Can the use of 'last look' be standardised or be part of the global code of conduct?

'Last Look' should be subject to best practice understanding and not a standardised approach. Last look serves a purpose but should not become a conduit for latency arbitrage.

The FX market can achieve standardisation practice in the EU by embracing techniques that discover liquidity which may be non-latent or offshore under a common and passported conduct regime. This may include venues listing indications of interest and pricing curves or acting as recurring volume auctions at different prices.

In Europe it would appear that the MiFIR architecture is actually set to cement 'last look' into the OTF functionality, whilst MTFs may be required to demonstrate the absence of discretion on the part of the venue operator.

Contributor: LMAX Exchange

Pat Bartle
Global Head of FX Strategy,
LMAX Exchange

The end for 'last look'?

The practice of 'last look' is a legacy business solution to an historic technology problem. As is the case now, market makers reasonably wanted to protect themselves against sudden fluctuations in the market. However, the technology platforms at most financial institutions were not robust enough to stream prices without introducing enormous amounts of new market risk into their businesses. At the time, the obvious patch for the shortcoming in technology and the continued desire to responsibly manage risk while at the same time increase the breadth of the business' market making reach, was to introduce what is now known as 'last look'.

Fast forward to today, and financial institutions have invested greatly in people, platforms and technology and electronic trading is no longer a small offshoot of a bank's core FX business it is the core FX business. This attraction of resources and advances in technology platforms across the marketplace, also calls for the evolution of market standards and best practices.

Our view is clear at LMAX Exchange. We can process one hundred million orders per day, cancel and replace orders in sub-one-hundred microseconds and do seven million real time risk calculations per second. Technology has moved on dramatically, and the same needs and rationalisations for 'last look' are no longer the same. In today's environment, we feel it creates an uneven playing field biased against clients, whether they are cognisant of it or not, and equally as important, against financial institutions who are trying to create a new market order with greater transparency and equality, yet are forced to compete with those who are not yet willing or mandated to do so. It can be a very daunting task if not every market participant operates to the same level of standards.

As you have no doubt sensed, at LMAX Exchange, we are not proponents of 'last look' for numerous reasons, including the possible abuses and optionality that it introduces into pricing. At LMAX Exchange, we have many financial institutions successfully operating in a 'no last look'

Contributor: LMAX Exchange (cont'd)

environment, honing the precision of their pricing and successfully making markets to our varied client base. It is proof of concept that the market is able, but perhaps not yet completely willing to mature and move toward greater transparency and the greater equality that 'no last look' will help bring to the foreign exchange markets.

What are the next steps or the solution? The current market trend is to move toward loosely monitored lower reject rates, with liquidity providers accepting a higher percentage of trades. In principle, this may seem like a logical proposal or first steps towards a 'no last look' environment. However, in practice, who polices these new 'standards' and how? Is it done on the desk level, by currency, amount or geography, by client or by the client, by the business, by the financial institution, or by regulators? And what are the sanctions? Who sets them and who imposes them? Partial changes in best practices or a muted response by market participants and regulators to current accepted practices around 'last look' seems to create only more issues and costs around the monitoring and policing of the issue.

LMAX Exchange, along with a small handful of other venues, is proof that demonstrates that trading without 'last look' is a wholly viable option for both market makers and the clients who take their liquidity. Moreover, by doing so, these participants disassociate or distance themselves from a practice which is open to abuse, while at the same time improving both the transparency and quality of execution in the market place. This is not a transition that takes place overnight, but sooner, rather than later, market participants will have to accept the mature, transparent nature of the foreign exchange market and its place and status with other mature asset classes and their markets and realise the practice of 'last look' is no longer defensible.

Expert View: Regulation and Standardisation

Contributor: LMAX Exchange

David Mercer
CEO, LMAX Exchange

FEMR: What happens next?

The work of FEMR and its endeavour to bring increased fairness and transparency to the FX market should be welcomed and supported by all within the industry. The review marks an important move towards creating new standards within FX, both of conduct and trading practices.

It is no secret that trust in the FX industry has been badly eroded and the market needs to work hard to demonstrate its integrity and demonstrate to customers they are getting a fair deal. FEMR is an important first step in the right direction, and has outlined many of the right recommendations: from a new global code of conduct for the industry, to standardisations in trading practice that are long overdue – such as on the time stamping of orders.

FEMR has opened a series of debates that the FX industry now needs to take forward and resolve. What matters now is that the initiatives to develop the new code of conduct, agree on standardisation of trading practices, and work towards greater transparency in the market, are supported to their conclusion across the market. The FX industry needs to look ahead to the challenges it will face and develop regulation accordingly, not simply solving those faced by the market today.

The FX market needs to show that it is serious about becoming more transparent and providing more information to customers who want evidence of best execution. It needs to demonstrate a commitment to clamping down on practices which are open to abuse. And it needs to be proactive in establishing universal standards of conduct, and backing these up with appropriate sanctions when breached. FEMR has provided the stimulus for all of these issues to be looked at, and what happens now will be the most important thing for the market in the long term.

If the industry has a responsibility to follow through the recommendations of FEMR, there are parallel imperatives facing the regulators themselves. One is greater international collaboration: too much, from the UK to the US and further afield, is being done by regulators independently, creating an inconsistent international picture, and the potential challenge of extraterritoriality. The UK and US regulators, who oversee a combined 60% of the $5.3tn global market, need to take the lead in establishing common standards that avoid a fragmented regulatory picture and the existence of regulatory arbitrage.

In such a large and global market, regulation is no easy task, and most within the industry have agreed that it must be led by the market itself. The complexity of creating international standards means that the progress will inevitably take time, but it is an essential process, if the FX market is to regain the trust it has lost among customers and reshape itself for a vastly changed world.

Contributors

About Aite Group

Aite Group is an independent research and advisory firm focused on business, technology, and regulatory issues and their impact on the financial services industry. With expertise in banking, payments, securities & investments, and insurance, Aite Group's analysts deliver comprehensive, actionable advice to key market participants in financial services. Headquartered in Boston with a presence in Chicago, New York, San Francisco, London, and Milan, Aite Group works with its clients as a partner, advisor, and catalyst, challenging their basic assumptions and ensuring they remain at the forefront of industry trends.

www.aitegroup.com

About ITG Analytics

With over 20 years of experience in transaction cost analysis, ITG Analytics was able to use the available foreign exchange data to increase transparency and create sophisticated analytical products for the investment professional. ITG TCA® for FX is a powerful foreign exchange transaction analysis solution that increases transparency in an OTC market and provides tools to optimise trading, best execution reporting and measure performance against multiple benchmarks. Over the past three years, ITG has launched a suite of tools that enable market professionals to access foreign exchange trading costs from their smart phones or PCs. These tools range from free pre-trade mobile applications to quarterly analysis of trading against sophisticated benchmarks to customised cost curves.

ITG TCA® for FX changes the game for FX traders by providing access to one of the industry's most comprehensive FX transaction databases on a variety of platforms, including hand-held devices. Our full set of analytics help our customers improve execution quality through pre-trade strategic overviews, daily FX cost curves and one of the most advanced post-trade systems in the market.

www.itg.com

Contributors

About Nasdaq

Nasdaq (Nasdaq: NDAQ) is a leading provider of trading, clearing, exchange technology, listing, information and public company services across six continents. Through its diverse portfolio of solutions, Nasdaq enables customers to plan, optimise and execute their business vision with confidence, using proven technologies that provide transparency and insight for navigating today's global capital markets. As the creator of the world's first electronic stock market, its technology powers more than 70 marketplaces in 50 countries, and 1 in 10 of the world's securities transactions. Nasdaq is home to more than 3,600 listed companies with a market value of approximately $9.6 trillion and more than 10,000 corporate clients.

business.nasdaq.com.

About SEB

SEB is a leading Nordic financial services group. As a relationship bank, SEB in Sweden and the Baltic countries offers financial advice and a wide range of other financial services. In Denmark, Finland, Norway and Germany the bank's operations have a strong focus on corporate and investment banking based on a full-service offering to corporate and institutional clients. The international nature of SEB's business is reflected in its presence in some 20 countries worldwide. On June 30, 2015, the Group's total assets amounted to SEK 2,760 billion while its assets under management totalled SEK 1,780 billion. The Group has about 16,000 employees. Read more about SEB at

www.sebgroup.com.

Contributors

WMBA

About WMBA:

The WMBA exists to enhance and preserve the integrity of wholesale markets and global financial liquidity via the capacity for the provision of risk mitigation services to the global marketplace in open access and competitive platforms and venues.

The members of the WMBA advocate the following principles:

- Open centralised clearing.
- Choice in trade arranging and execution
- More effective regulation of wholesale OTC markets, focused on participants rather than products.
- Encouraging competition and innovation
- The use of regulated electronic transaction execution systems

www.wmba.org.uk

speed › price › transparency

LMAX EXCHANGE

About LMAX Exchange

Recognised amongst the UK's fastest growing technology firms for three consecutive years (2015, 2014 and 2013 Sunday Times, Tech Track 100), LMAX Exchange is the leading MTF for FX, authorised and regulated by the FCA. Servicing retail brokers, funds, corporates, asset managers and banks, LMAX Exchange delivers a unique vision for global FX trading - a transparent, neutral, level playing field for all market participants, regardless of status, size or activity levels.

The LMAX Exchange OPEN order book is driven by streaming, no 'Last Look' limit orders supplied by General Member liquidity providers. LMAX Exchange offers a range of key products, including spot FX, precious metals, commodities and equity indices, with complete pre and post-trade transparency and order execution where no 'last look' is standard. Orders are executed in strict price/time priority at an average speed of 4ms.

FX Industry awards

- **2015 #6 Fastest Growing Tech Company in the UK** – Sunday Times Tech Track 100
- **2015 Best Margin Sector Platform** – Profit & Loss Readers' Choice Awards
- **2015 Best FX Trading Venue – ECN/MTF** – WSL Institutional Trading Awards
- **2014 #1 Fastest Growing Tech Company in the UK** – Sunday Times Tech Track 100
- **2014 Best Margin Sector Platform** – Profit & Loss Readers' Choice Awards
- **2014 Best FX Trading Venue – ECN/MTF** – WSL Institutional Trading Awards
- **2014 Best Infrastructure/Technology Initiative** – WSL Institutional Trading Awards
- **2013 #15 Fastest Growing Tech Company in the UK** – Sunday Times Tech Track 100
- **2013 Best Overall Testing Project** – The European Software Testing Awards
- **2013 Best Margin Sector Platform** – Profit & Loss Readers' Choice Awards
- **2013 Best FX Trading Venue** – ECN/MTF – WSL Institutional Trading Awards
- **2013 Best Execution Venue** – Forex Magnates Awards
- **2011 Best Trading System** – Financial Sector Technology Awards
- **2011 Innovative Programming Framework** – Oracle Duke's Choice Awards

A report by LMAX Exchange

Restoring trust in global FX markets

Striking a balance between transparency and efficiency

speed › price › transparency

LMAX EXCHANGE

LMAX Exchange is authorised and regulated by the Financial Conduct Authority as an MTF for spot FX