

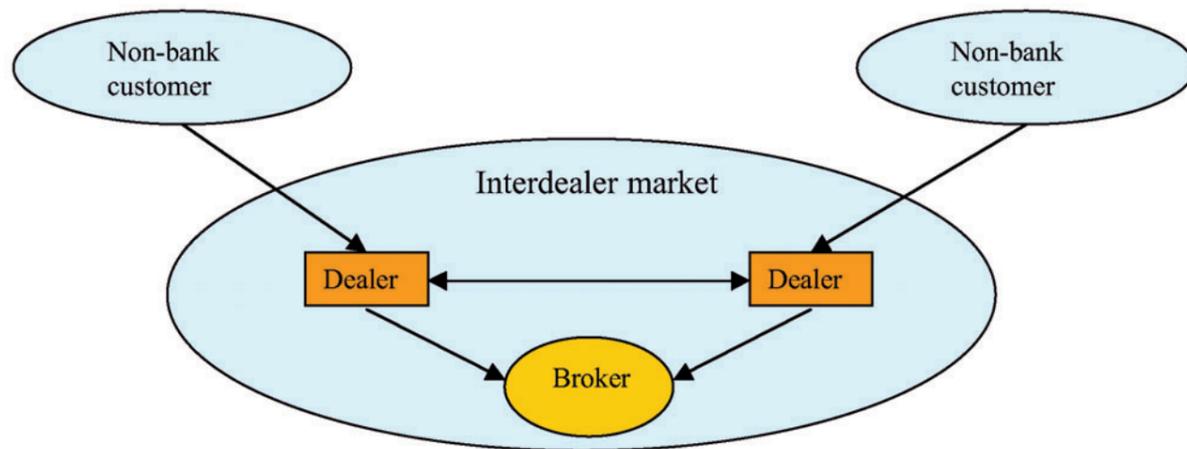
Electronic FX Trading - influencing dealer behaviour?



The two most important qualities of any financial market are liquidity and how information is incorporated into prices (price discovery). In the FX market these two are determined by the interaction and behaviour of dealers. Dealer behaviour is (partly) a function of market structure because market structure governs what dealers **can do and know**.

The introduction of electronic brokers in 1992 changed the structure of the FX market dramatically. In 1992 it was a quote-driven dealer market; today it is primarily an order-driven dealer market. We discuss how this change in structure has influenced what dealers can do and can know, the behaviour of dealers, and implications for price efficiency and liquidity.

We start by discussing the structure of the pre-electronic broker market by way of comparison. The figure shows a general view of the structure of the FX market.



Dealer behaviour prior to the electronic brokers

In 1992 dealers traded with each other either directly, e.g. on Reuters D2000-1, or indirectly through voice-brokers. The market was very opaque. Customer orders, which dealers believe is important information, was only known to the bank taking the trade. Prices were announced over the voice-brokers, and some trades as well. All direct bilateral trades, which accounted for approximately half of all interbank trades, was only known to the parties involved.



Geir H. Bjønnes
Norwegian School of Management



Dagfinn Rime*
Norges Bank

Lyons^[1] studies a New York-based dealer during one week of August 1992, and finds indications of typical market maker behaviour. The dealer traded primarily by giving two-way quotes on request (i.e. incoming direct trades), and rarely on other dealers' quotes (outgoing direct) or indirectly through voice-brokers. Lyons' dealer protected himself against better informed dealers by increasing the spread with the size of the trade. To control inventory he used prices instead of trading outgoing. If he was long he would reduce his bid and ask prices in order to motivate trading at the ask (a sale on his behalf).

This dealer was extremely successful, with huge profits during the week in question.

This strategy made perfect sense. Since he was in an investment bank with little or no customer flow he did not have access to superior information. Instead of profiting from speculation through market orders, he made money from the spread. In order to attract orders in an opaque market he established a reputation for competitive pricing.

Using his prices to control inventory allowed him to offer competitive prices. Furthermore, to control inventory in a decentralized market one has to use the opportunities that come along. The alternative to search for counterparties (including voice brokers) could be too expensive. Since he was trading with presumably better informed dealers, he also protected himself by widening the spread when trade sizes increased. However, by attracting lots of market orders from big, presumably informed, dealers he could learn about the prices that could balance the buy and sell order flows. As such he was able to profit from the spread because his mid-point was "correct".

This would not be the strategy of the informed dealers. In order to utilize their information quickly they would place market orders with a market maker. They could have used a voice broker as well, but there might be a risk of the voice broker "leaking" the information to others. It could also be more expensive as voice brokers charged commission on both limit orders and market orders to cover the costs involved in the search for matching counterparties.

In this kind of market structure liquidity, in way of immediacy, was adequately filled by the market makers. Trading larger sizes was possible, but with larger spreads. Low transparency made information, e.g. on order flow, less readily available for incorporation into prices. This can make prices inefficient.

Electronic brokers and dealer behaviour

Electronic brokers were introduced in FX by Reuters in 1992 and by EBS in 1993. These trading systems allow dealers to submit limit or market orders to computerized networks, which then match the orders. The electronic brokers rapidly gained popularity, and are now the dominant tool for interdealer trading. Compared to "old-fashioned" voice brokers, the electronic brokers offer much higher execution speed. The rapid increase in market shares suggests that the electronic brokers facilitate risk sharing in a way that was not previously available.

The increased market share of electronic brokers has also increased transparency in the interdealer market. Dealers not only see more prices than before, they can also see the direction of all trades executed through the electronic broker (proxy for order flow).

In addition to best bid and ask prices, the electronic brokers announce bid and ask prices good for amounts of at least 10 mio. Hence, the dealers may get some impression of the depth of the market. Interestingly, the increased transparency of the interdealer market is chosen by the dealers themselves, since they decide which trading system to use. Note, however, that this increased transparency is only relevant for dealers. Non-bank customers have no access to the electronic brokers. Nevertheless, the quality of price information available to the customers has improved.

As a consequence of the shift from direct (bilateral) trading towards electronic brokers, hot potato trading among dealers is reduced. Hot potato trading arises when a dealer wants to get rid of an unwanted position (e.g. established through a customer trade). The dealer contacts another dealer. If this dealer does not want to keep the position, he passes it to another dealer and so on. The hot potato arises because dealers have no knowledge, ex ante, of which dealers are long and which are short. Electronic brokers distribute the "hot potato" more or less instantaneously. Since trading on electronic brokers is voluntary, those that want to buy place their limit orders at the bid. Hence, hot potato trading is now much smaller than before. The volume numbers from the triennially statistics from Bank of International Settlements indicate that the interdealer market share of total spot trading fell from 72% in 1992 to 56% in 2001.

In our paper^[2] we analyze four dealers during one week in March 1998, a period when electronic brokers had established themselves as the dominant trading tool. We find that order flows (the trading of the market order) also carry information in a limit order book (as for Lyons' dealer in 1992). This is not self-evident. In many stock markets with limit order books market orders have almost disappeared, so measuring order flow is not straightforward. The informed dealers may place limit orders, i.e. hide as liquidity providers. Our findings, and analyses by Danielsson and Payne^[3], confirm that informed dealers still use market orders. They are still the most impatient. We find that as much as 80 percent of the bid and ask spread can be explained by private information.

*The views expressed here do not necessarily represent the views of Norges Bank.

[1] Richard K. Lyons. *The Microstructure Approach to Exchange Rates*. MIT Press, Cambridge, MA, 2001.

[2] Geir H. Bjønnes and Dagfinn Rime. Dealer behaviour and trading systems in foreign exchange markets. *Journal of Financial Economics*, 2004. Forthcoming.

[3] Jon Danielsson and Richard Payne. Liquidity determination in an order driven market. mimeo, Financial Markets Group, LSE, 2002.

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Conversely, we do not find any evidence of inventory control through prices, as with Lyons' dealer from 1992. Our dealers do control inventory by submitting limit orders, and as such supply liquidity, but they do not improve on the best prices in order to do this. This is confirmed by Danielsson and Payne; most limit orders are placed at the best bid and ask. Dealers use limit orders to control inventory because they want to gain from trading on better prices when they are more patient. Some of the dealers use market orders when their inventory is particularly imbalanced. They do not improve on the spread because they do not have to. The kind of quote shading that Lyons dealer did was making one side attractive and one ugly. In limit order markets the dealer does not have to place two-way prices. Furthermore, the execution speed when limit orders are placed at the best price is quite high. Lyons' dealer had to control inventory when opportunity came along, so he shaded quotes.

Is the current structure promoting liquidity more than the previous structure? To the degree that centralization increases liquidity — electronic brokers make the search for counterparty problem trivial for most transactions — it has. But for larger sizes it may be that the previous structure was better. Immediacy was good, for all sizes, but at a cost. Since there are fewer dealers today filling a market maker role, limit orders are voluntary and not necessarily two-sided, it may not be possible to trade large sizes in one order via the electronic brokers. Higher transparency may have increased the efficiency of the market, but it also has opposing effects. More transparent markets are less attractive for speculators (presumably informed), and may make the order flow less informative.

The road ahead

How will the foreign exchange market develop in the future? During the last few years we have seen the emergence of internet-based trading alternatives for customers. Some of the trading platforms (e.g. FXAll) offer internet-based trading where non-bank customers trade directly with FX dealers. These platforms make it easier for the customers to obtain information on prices from dealers. However, the structure is not very different from the traditional direct trading between dealers and non-bank customers. When using these systems, non-bank customers still trade directly with the dealers. There are also trading platforms where customers trade with customers without going through banks (e.g. HotSpotFX and ChoiceFX). Some internet addresses are available in table 1. So far, volumes have been small.

However, more volume will again attract more volume and so on (network effects). A natural question to ask is whether this trading may be a threat to the traditional trading between dealers and non-bank customers.

The FX banks have strong interests in keeping today's structure.¹⁴ One way to do this is to keep customers' transaction costs at such a level that other alternatives are not able to establish a significant foothold, and thus will not be able to develop the network effects needed for lower-cost liquidity provision. We have already seen a trend of decreasing transaction costs for non-bank customers. If the market is still developing in the direction of centralized customer trading, we may expect to see the dominant interdealer brokers (EBS and Reuters) open the brokers to customers (even though EBS is owned by the top FX banks). From their viewpoint it is important to maintain the network liquidity effects in its favor (actually, this option makes it less attractive for others to launch new centralized systems).

The dealers will probably be important whether the electronic brokers are opened to non-bank customers or not. Dealers will still have a competitive advantage in liquidity provision (e.g. they see more order flows). Furthermore, dealers and banks may have a competitive advantage in handling counterparty credit risk. The introduction of non-bank customer trading sites may in the future make information about customer order flow more in the public domain, and as such decrease dealers' possibility to speculate.

Trading systems in the interdealer market:

EBS	http://www.ebs.com
Reuters D3000	http://www.about.reuters.com/products/dealing3000/index.asp

Trading between non-bank customers and dealers on the internet:

FX Connect	http://www.globallink.com
FX All	http://www.fxall.com
Currenex	http://www.currenex.com

Non-bank customers trading without dealers (e.g. through electronic brokers)

OANDA	http://www.oanda.com
HotSpot FX	http://www.hotspotfx.com
IG Markets	http://www.igmarkets.com
FXDealerDirect	http://www.fxdd.com
Dealstation	http://www.mgforex.com
ChoiceFX	http://www.choicefx.com
Deal4Free Forex	http://www.deal4free.com/forex
GFT's DealbookFX	http://www.gftforex.com
GCI	http://www.gcitrading.com
IFX Markets	http://www.ifxmarkets.com
Gain Capital	http://www.gaincapital.com

¹⁴ Richard K. Lyons. The future of the foreign exchange market. *Brookings-Wharton Papers on Financial Services*, 2002.