

# Canadian Foreign Exchange Market Liquidity and Exchange Rate Dynamics

*Chris D'Souza*

**A** liquid financial market is a market in which supply and demand can be matched at a low cost. It is important that there be ample liquidity in the Canadian foreign exchange market, since a poorly functioning foreign exchange market will create additional costs for companies engaged in international trade or investments, thereby adversely affecting the economy. One way to analyze liquidity in the foreign exchange market is through market-microstructure research, which focuses on market arrangements and practices.

The foreign exchange (FX) market in Canada consists of a network of financial institutions linked together by a high-speed communications system. The participants in the FX market include dealers, customers, and brokers. Dealers continuously supply bid and ask quotes to both customers and other dealers. Through the course of the day, they stand ready to buy and sell foreign exchange, thus providing liquidity to the market. Brokers in the FX market are those intermediaries who match the best buy and sell orders of dealers. Unlike dealers, who sometimes take speculative positions, brokers act as pure matchmakers. In Canada, most of the actual trading in the foreign exchange spot market is handled by the top Canadian banks through their foreign exchange operations. Customers in these markets are those financial and non-financial corporations that need foreign currencies for financing international trade, investing overseas, hedging cross-currency transactions, or pursuing short-term investment opportunities, and those corporations that have supplies of foreign exchange.

Dealers in the foreign exchange market distinguish between two types of trades: customer trades<sup>1</sup> and proprietary trades. For customers,

the ability to complete trades quickly is important when adjusting their FX position. Dealers provide this fundamental element of liquidity to the market by trading with the customer. In providing these liquidity services, however, dealers may take on an undesired amount of exposure to foreign exchange risk. Proprietary trades are trades on a dealer's own account to adjust its own FX portfolio position. These trades are undertaken to help dealers manage their exposure to foreign exchange risk in a profitable fashion. Proprietary trades are typically undertaken on the basis of available information about likely changes in foreign exchange rates. To achieve their foreign exchange investment objectives, dealers must be assured that their information is at least as good as that of their trading counterparty, since trading against better-informed traders is a losing proposition.

One way that dealers gauge market information is to observe order flow. One measure of order flow is the aggregate value of buy orders relative to sell orders that have been completed or that are "queued up" for future trades. An excess quantity of net buy (sell) orders for the Canadian dollar suggests that other market participants have a positive (negative) impression about the future prospects of the Canadian dollar based on available information. Dealers acquire order-flow information from customer trades and through their communications with brokers. In this last case, they may have electronic access to broker "screens," which contain a part of the order flow.

Order flow is one key component of the market-microstructure approach,<sup>2</sup> and is found to explain a large proportion of the short-term (daily, weekly, or even quarterly) variation in nominal exchange rates. In contrast to traditional models of the exchange rate, which rely on factors such

1. Customers include the Bank of Canada, commercial client businesses, and non-dealer financial institutions. Canadian chartered banks also trade with each other as part of the interdealer market.

2. See O'Hara (1995) for a review of market-microstructure models.

as interest rates, money supply, rates of inflation, gross domestic product, the trade account balance, and commodity prices to explain exchange rate movements, order flow focuses on changes in the market expectations of changes in these factors. Therefore, it often performs more favourably than the individual factors themselves in empirical studies of short-term FX rate movements.

While recent market-microstructure studies of the FX market have had some preliminary success empirically in explaining exchange rate movements using order-flow information, the underlying determinants of order flow and the behaviour of the dealers who provide liquidity to this market have not been tested explicitly. According to the microstructure view, liquidity will be affected by the institutional features and information flows of the foreign exchange market. It is therefore of interest to examine whether access to private information via customer trades, and the management of their own FX positions affect a dealing bank's willingness to supply liquidity to the Canadian FX market.

Some researchers (e.g., Lyons 1997) have argued that customer trades are the catalyst for profitable dealer strategies. Our work suggests that dealers behave similarly in response to all types of trades, independent of where trades originate. This indicates that valuable private information about the fundamentals that may affect the value of the exchange rate is not obtained only from individual customer trades. Instead, it appears that dealers use private information about their inventories, which are affected partly by their own customer orders, as a profitable avenue for speculation in the interdealer market.

This has direct implications for liquidity in the FX market. Providing liquidity to customers allows dealers the opportunity to speculate in the interdealer market. The more profitable such speculative opportunities are, the more competitive dealers will become in attracting customer orders. Consequently, the spreads between their bid and ask quotes for customer trades will be smaller. Furthermore, our work suggests that liquidity in the Canadian FX market is not affected by the type of trading with the dealer, i.e., it occurs from both customer trades and trades in the interdealer market.

Daily hedging and risk-management practices of banks with dealing operations can also be

examined. Information about each dealer's net trading position over the course of a day, in both spot and forward contract FX markets, suggests that financial institutions operating in the FX market behave in a similar way when managing their exposure to market risk. In particular, dealing banks do not fully hedge their spot market risk. The amount of hedging depends on market volatility, the magnitude of banks' risk exposure, and their comparative advantage in bearing risk, especially compared with their customers.

There are various sources of comparative advantage for dealing banks in bearing risk: First, reciprocal agreements between dealing banks guarantee that these market-makers have access to liquidity. Customers, however, do not have this same access. Second, banks allocate capital across business lines in order to diversify risk and return. This allows intermediaries to bear risk with a higher tolerance than the customers at non-financial institutions that may be specialized in relatively few business lines.<sup>3</sup> Hedging by dealers is found to depend on the overall risk-bearing capacity of dealers in the market and on each dealer's individual access to order flow. Analysis suggests that liquidity provision in spot and derivatives markets is determined interdependently, since prices in these markets are correlated, and dealers are able to hedge risk across markets.

Interpreting FX trading data through market-microstructure models helps characterize some of the factors that determine liquidity in the FX market. Results obtained to date suggest that dealers with greater opportunities for profitable speculation and a larger appetite for risk will provide greater liquidity to the market. More generally, a focus on the institutional features of the market that determine its dynamics is critical to understanding market liquidity. Policy-makers and researchers can use the tools developed in the field of market-microstructure finance to determine the effects of various factors on liquidity. These factors include the increased utilization of electronic brokering systems, a declining number of reciprocal agreements among dealing banks to provide liquidity, possible consolidation of dealing banks, and the greater participation of foreign dealers in the Canadian FX market.

---

3. D'Souza and Lai (2002) show that a decentralized capital-allocation function can reduce the overall risk of a financial institution with business lines that have correlated cash flows.

## References

- D'Souza, C. 2002a. "A Market Microstructure Analysis of Foreign Exchange Intervention in Canada." Bank of Canada Working Paper No. 2002-16.
- . 2002b. "How Do Canadian Banks That Deal in Foreign Exchange Hedge Their Exposure to Risk?" Bank of Canada Working Paper No. 2002-34.
- D'Souza, C. and A. Lai. 2002. "The Effects of Bank Consolidation on Risk Capital Allocation and Market Liquidity." Bank of Canada Working Paper No. 2002-5.
- Lyons, R. 1997. "A Simultaneous Trade Model of the Foreign Exchange Hot Potato." *Journal of International Economics* 42: 275–98.
- O'Hara, M. 1995. *Market Microstructure Theory*. Cambridge, Mass.: Blackwell Business.