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Book review

The Microstructure Approach To Exchange Rates, by Richard K. Lyons, MIT Press, 2001.

The exchange rate determination literature has been in the doldrums ever since the publication of Meese and Rogoff's (1983) study showing that a random walk model out-performs standard open economy macroeconomic models in forecasting exchange rates. In the subsequent twenty years, international financial economists have departed in various directions, theoretical and empirical, attempting (with various degrees of success) to overturn the Meese and Rogoff result. Richard Lyons, initially working alone and eventually with co-authors, took a different route than most of the profession: he went directly to the foreign exchange market to figure out what was missing from the models. He literally joined a foreign exchange trader in New York to observe the market first-hand, with the hope that a better understanding of the trading process might lead to new insights into aggregate exchange rate movements. This excellent book is the culmination of Lyons' ten-year "in the trenches" study of foreign exchange markets and the role that microstructure plays in the determination of currency movements.

What is novel and provocative about this book is Lyons' take on the way in which the trading process, and in particular "order flow" in the market, helps us better understand why and when exchange rates move. Although Lyons is suggesting a fairly radical departure from the standard ways in which international finance economists think about exchange rate models, his own background in the field means that he is able to understand and sometimes preempt some expected concerns. The book is organized in such a way that readers with different intellectual traditions and interests can pick among the various chapters without losing the thread of Lyons' key arguments. For example, the chapter on theoretical frameworks (chapter 4) provides an overview of microstructure theory that should likely be skipped by those already well versed in the field. Likewise, chapter 6 (Exchange Rate Models: Macro to Microfoundations), could easily be skipped by most students of open-economy macroeconomics.

The core material in the book is laid out in Chapter 2 (The Economics of Order

Flow Information). Lyons goes to great pains starting in chapter 2, and throughout the book, to make clear that information contained in order flow is the key missing ingredient from traditional exchange rate determination models. Indeed, perhaps a better title for the book would have been “The Role of Order Flow in Explaining Exchange Rate Behavior”. His “microstructure approach” is a fairly narrow one, from the perspective of the larger microstructure literature (see for example, O’Hara (1995)), in that he is mostly focused on the role of order flow information, and not the role of particular market players, or trading mechanisms.

One gets the sense reading the book that Lyons thinks of order flow as a kind of ‘smoking gun’ (if we did not already feel that exchange rate determination models were in trouble), since order flow – a variable that is not present in any of the standard models – is a very powerful empirical explainer of exchange rate movements. Lyons presents this as evidence that a new “microstructure approach” is needed. But, as with a “smoking gun” in the courtroom, the presence of smoke (and gun) does not necessarily pin down who shot the gun, why the gun was shot, and whether the shot did any damage. Although reading the book convinced me that order flow is important, I am still unclear about what causes order flow to change and why, and whether a better understanding of order flow changes will necessarily advance our fundamental understanding of what determines exchange rate movements. But I am getting ahead of the story.

One of the confusing aspects of order flow that Lyons clears up early on, in chapter 1, is how it differs from “excess demand”. Order flow is signed transaction volume, so it tells us the relative number of buyer-initiated versus seller-initiated orders in a market. Market-makers in the foreign exchange market take the passive side of transactions and, for a price, are willing to absorb imbalances between buyers and sellers. In contrast, excess demand is always zero in equilibrium. Further, order flow measures actual transactions – distinguishing it from “demand” which can change without inducing transactions. Order flow therefore provides information to dealers in the foreign exchange market about the relative demand for currencies at a point in time, and this demand, in turn, is assumed to be driven by fundamentals. A key assumption underlying the role of order flow is that some information relevant to exchange rates is not publicly available. If information about fundamentals and the mapping of this information to prices are fully public, then dealers do not learn anything new from order flow. It is precisely because some information, or the interpretation of the information, is not public that order flow is so valuable.

Those readers who are interested in examining for themselves whether market microstructure can help us better understand exchange rate movements will find plenty of useful information in chapter 5. Here Lyons both provides information about data sources (although most of the data sets described are either expensive or not publicly available) and empirical frameworks. The first section of the chapter provides a nice description of the various sorts of transactions that occur in foreign exchange market (trades between customers and dealers, direct inter-dealer trades

and brokered inter-dealer trades) and which of these trades are covered in the (again, mostly unavailable) data sets. The next sections provide discussions of alternative empirical specifications (statistical and structural) that test different aspects of the order flow to price relationship.

Chapters 7 and 8 are the two chapters most likely to incite disagreement. In chapter 7 Lyons suggests that market microstructure can help us solve the “big three” macro puzzles (the exchange rate—fundamentals disconnect puzzle, the excess volatility puzzle, and the forward bias puzzle). It is, unsurprisingly, order flow that he suggests provides the missing puzzle piece. In the case of the “exchange rate disconnect puzzle”, he argues that the reason past empirical work has failed to find a relationship between fundamentals and exchange rates is that the two are connected (at least in part) by order flow. Even if we think that all fundamental information is public, it is necessary also to know how that public information is interpreted (it is summarized in order flow) since otherwise there may be no direct connection between the information and exchange rate movements. This is the key idea in Evans and Lyons (2002), and is one of the core pieces of “evidence” Lyons points to in arguing the merits of the microstructure approach. Most readers, this one included, will feel uneasy about resolving the exchange rate disconnect puzzle (as well as the other two puzzles) with a variable that seems so “endogenous”. Lyons anticipates this unease with two sections entitled “But What Drives Order Flow?” and “Comments on Causality” – though he leaves any definitive answers for future work and some suggestive results in chapter 9.

Given my own research interests, I was particularly intrigued by Chapter 8 (Microstructure and Central Bank Intervention). Lyons begins with an overview of sterilized intervention (in theory and practice) and the channels that might lead intervention operations to influence exchange rates. He then attempts to make a case for focusing on the portfolio balance effects of secret interventions (interventions that are not contemporaneously known by market participants) as a segue to the Evans and Lyons (2001) study (which measures the impact of “secret” interventions during a period when there were no actual intervention operations by using private trades as a proxy for interventions). My sense is that the main reason that central bank interventions have any influence is precisely because they are perceived by traders to be different than other transactions. I also must take issue with the assumption that interventions are secret (indeed, in my own work, Dominguez (2003), I have relied on contemporaneous reports of interventions over the newswires to time when traders know that central banks are in the market). All that said, I do agree with Lyons’ final assessment, that the microstructure framework and new datasets have the potential to help us better understand how central bank interventions influence exchange rates.

The final two chapters in the book are more visionary than the rest, in that they mostly describe work yet to be done. Chapter 9 focuses on foreign exchange customers, presumably the source of underlying demand for currencies in the

economy. Although customers feature prominently in the theory sections of the book, they are largely not represented in the empirical studies because data on customer orders have only recently been made available (to Fan and Lyons (2000) by Citibank). One of the more interesting questions that these new data may help disentangle is whether orders of some participants in the market (for example, financial institutions versus non-financials) are more informative than those of others. Lyons presents a case study of the collapse of the yen/dollar rate in October 1998 (when the rate fell by roughly 10 percent in one day with no apparent accompanying macro news) to highlight some of the sorts of questions that might be answered with disaggregated customer trade data.

The final chapter (Looking Forward) provides both a nice synthesis of the main lessons in the book and a roadmap for researchers who hope to pick up where the research described in the book ends. The chapter is certainly a “must-read” for any graduate student who is fishing around for a dissertation topic in the field. Lyons describes what he sees as the many “open” academic and policy issues that microstructure models and data can help us resolve, as well as some of the institutional changes that are likely to take place in currency markets in the next few years.

In conclusion, although reading this book is unlikely to convince the profession that order flow is the missing puzzle piece in exchange rate economics, it will convince many to think more deeply about how information influences trading behavior. The book provides a wealth of information about the markets that most of us only think about in a very abstract (and aggregate) way, and it also provides an excellent overview of the emerging literature in foreign exchange market microstructure. I recommend this book to all those who are still hopeful that Meese and Rogoff is not the final word on exchange rate behavior.

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References

- Dominguez, K.M.E., 2003. The market microstructure of central bank intervention. *Journal of International Economics* 59, 25–45.
- Evans, M.D., Lyons, R.K., 2001. Portfolio balance, price impact and secret intervention, NBER Working Paper 8356, July.
- Evans, M.D., Lyons, R.K., 2002. Order flow and exchange rate dynamics, *Journal of Political Economy*, 170–180.

- Fan, M., Lyons, R.K., 2000. Customer-dealer trading in the foreign exchange market, typescript, U.C. Berkeley, July.
- Meese, R., Rogoff, K., 1983. Empirical exchange rate models of the seventies. *Journal of International Economics* 14, 3–24.
- O'Hara, M., 1995. *Market microstructure theory*, Cambridge, MA: Blackwell Business.