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A Micro Model of the Federal Funds Market: Discussion

Author(s): Paul A. Spindt

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DISCUSSION

PAUL A. SPINDT*: The paper by Messrs. Ho and Saunders rationalizes the determination of the Federal funds rate in the context of a micro theoretic model that is relatively rich in institutional detail. For several reasons, I believe that the line of inquiry developed in the paper is of basic significance for the study and modeling of capital markets. In the first place, because it is the closest thing to an instantaneous spot rate that we observe in the actual capital market, the (overnight) funds rate is pivotal in the term structure if expectations matter. Then too, the particular role played by the funds rate in the conduct and interpretation of monetary policy gives it a unique significance in the capital market. It is therefore important that we thoroughly understand the mechanism whereby this rate is determined. Secondly, the funds rate is typically explained

* Arizona State University and the Board of Governors, the Federal Reserve System.

in an aggregative framework—i.e., without explicit reference to the actual market in which Federal funds are traded. The funds rate is used variously, for example, to clear the aggregate “market” for bank reserves, or even the market for “money.” But this type of analysis does not embody enough institutional detail to be useful for studying the relationship between the funds rate and other short-term rates or for analyzing interesting variations in monetary policy. Finally, those studies which have looked specifically at the market in which Federal funds are traded have been primarily descriptive rather than analytical in nature. Ho and Saunders are clearly aware of these shortcomings in the existing literature, and their paper represents a constructive effort to fill the gaps.

Ho and Saunders model the Federal funds market as a daily call auction that clears at the close of the business day. Sometime shortly before close of business, banks submit demand schedules, $Q_i(\rho)$, to a single broker who serves as auctioneer. While there are stochastic elements in each bank’s environment—notably $\tilde{k}$ and $\tilde{R}_i$ —the demand functions $Q_i(\rho)$ are nonstochastic depending only on the first and second moments of the joint distribution of $\tilde{k}$ and $\tilde{R}_i$ and the parameters e_i and Z_i . Given the stack of $Q_i(\rho)$, the broker uses the equilibrium condition that $\sum Q_i(\rho) = 0$ to compute a market clearing rate $\bar{\rho}$ and the associated quantities $Q_i(\bar{\rho})$. He then takes funds from net supplying banks, $Q_i(\bar{\rho}) < 0$, and doles out funds to net demanding banks, $Q_i(\bar{\rho}) > 0$, before closing up shop for the day. Importantly, in this setup neither the market clearing funds rate nor the amounts $Q_i(\bar{\rho})$ are random quantities.

Although this model departs from the actual institution in several obvious ways—the real market has multiple brokers, and trading takes place throughout the day, for example—it seems to me to capture some essential features of the interbank brokered market in Federal funds and leads to some highly useful results as Ho and Saunders demonstrate. Using this equipment, they are, for example, able to explain in an interesting way the observed differential in characteristic net funds purchasing behavior of large and small banks. They are also able to explain the spread $\bar{\rho} - k$, (where k is the homogeneously expected value of $\tilde{k}$) as a special kind of liquidity premium and show how it should vary with changes in the Federal Reserve’s operating policy. In particular, they argue, this premium should be larger under a reserves-oriented operating procedure than under interest rate targeting.

There is one part of the paper that is not, in my opinion, successful in accomplishing what the authors purport for it; this is the section in which the basic model is “extended. . . to analyze the interday behavior of the funds rate.” The main problem is that they have not spelled out how it is possible to go from the nonstochastic relation determining the daily equilibrium funds rate (18) to the stochastic Equation (19). If the actual funds rate is determined daily according to (18), then Equation (19) is certainly not a description of the process whereby the funds rate evolves over time. Nor can Equation (19) be viewed as representing a kind of nonsequential sampling of the funds rate if (18) is correct. Fortunately, the authors’ main results—with the exception of those concerning the variance of the funds rate—follow neatly from the basic model so the “extension” is inessential. Clearly, we should like to have an analytic description of the dynamic

behavior of the funds rate; but it's not clear to me that the setup in this paper can provide us with this description.

What Ho and Saunders have accomplished with the paper, however, is quite significant in my estimation. Their analysis contributes usefully to our understanding of (some aspects but not others of) price formation in the federal funds market and remedies some important shortcomings in the literature. It should also serve to stimulate further research.