The foreign exchange market is the largest, fastest-growing financial market in the world, featuring approximately $1.3 trillion worth of transactions every day. Yet conventional macroeconomic approaches do not even attempt to explain why people trade foreign exchange. At the same time, they fail at the task that they do set for themselves, accounting for the short-run determinants of the exchange rate.

These nine innovative essays use a microstructure approach to analyze the workings of the foreign exchange market, with special emphasis on institutional aspects and the actual behavior of market participants. They examine the volume of transactions, heterogeneity of traders, the time of day and location of trading, the bid-ask spread, and the high level of exchange rate volatility that has puzzled many observers. They also consider the structure of the market, including such issues as nontransparency, asymmetric information, liquidity trading, the use of automated brokers, the relationship between spot and derivative markets, and the importance of systemic risk in the market.

This timely volume will be essential reading for anyone interested in international finance.
The Microstructure of Foreign Exchange Markets
JEFFREY A. FRANKEL is a research associate of the National Bureau of Economic Research, where he is also director for International Finance and Macroeconomics. He is also professor of economics at the University of California, Berkeley, and senior fellow at the Institute for International Economics. GIAMPAOLO GALLI is chief economist of the Confederation of Italian Industry in Rome. When this book was written, he was head of the International Section of the Research Department of the Banca d'Italia. ALBERTO GIOVANNINI is a research associate of the National Bureau of Economic Research, a research fellow of the Centre for Economic Policy Research, and senior adviser of Long Term Capital Management. L. P.

The University of Chicago Press, Chicago 60637
The University of Chicago Press, Ltd., London
© 1996 by the National Bureau of Economic Research
All rights reserved. Published 1996
Printed in the United States of America
05 04 03 02 01 00 99 98 97 96 1 2 3 4 5
ISBN: 0-226-26000-3 (cloth)

Library of Congress Cataloging-in-Publication Data
The Microstructure of foreign exchange markets / edited by Jeffrey A. Frankel, Giampaolo Galli, and Alberto Giovannini.
p. cm.—(A National Bureau of Economic Research conference report)
Includes bibliographical references and index.
HG205.M53 1996
332.4′5—dc20
95-43757
CIP

National Bureau of Economic Research

Officers

Paul W. McCracken, chairman
John H. Biggs, vice-chairman
Martin Feldstein, president and chief executive officer
Geoffrey Carliner, executive director
Gerald A. Polansky, treasurer
Sam Parker, director of finance and administration

Directors at Large

Peter C. Aldrich
Elizabeth E. Bailey
John H. Biggs
Andrew Brimmer
Carl F. Christ
Don R. Conlan
Kathleen B. Cooper
Jean A. Crocken
George C. Eads
Martin Feldstein
George Hasopoulos
Karen N. Horn
Lawrence R. Klein
Leo Melamed
Merton H. Miller
Michael H. Moskow
Robert T. Parry
Peter G. Peterson
Richard N. Rosett
Bert Seidman
Kathleen P. Ugoff
Donald S. Wasserman
Marina v. N. Whitman
John O. Wilson

Directors by University Appointment

Jagdish Bhagwati, Columbia
William C. Brainard, Yale
Glen G. Cain, Wisconsin
Franklin Fisher, Massachusetts Institute of Technology
Saul H. Hymans, Michigan
Marjorie B. McElroy, Duke
Joel Mokyr, Northwestern
James L. Pierce, California, Berkeley
Andrew Postlewaite, Pennsylvania
Nahan Rosenberg, Stanford
Harold T. Shapiro, Princeton
Craig Swan, Minnesota
Michael Yoshino, Harvard
Arnold Zellner, Chicago

Directors by Appointment of Other Organizations

Marcel Boyer, Canadian Economics Association
Mark Drabensort, American Agricultural Economics Association
Richard A. Easterlin, Economic History Association
Gail D. Foster, The Conference Board
A. Ronald Gallani, American Statistical Association
Robert S. Hamada, American Finance Association
Charles Lave, American Economic Association
Rudolph A. Oswald, American Federation of Labor and Congress of Industrial Organizations
Gerald A. Polansky, American Institute of Certified Public Accountants
James F. Smith, National Association of Business Economists
Josh S. Weston, Committee for Economic Development

Directors Emeriti

Moses Abramovitz
George T. Conklin, Jr.
Thomas D. Flynn
Franklin A. Lindsay
Paul W. McCracken
Geoffrey H. Moore
George B. Roberts
Eli Shapiro
William S. Vickrey
James J. O'Leary

Since this volume is a record of conference proceedings, it has been exempted from the rules governing critical review of manuscripts by the Board of Directors of the National Bureau (resolution adopted 8 June 1948, as revised 21 November 1949 and 20 April 1968).
Contents

Preface ix

Introduction 1
Jeffrey A. Frankel, Giampaolo Galli, and Alberto Giovannini

I. TRADING VOLUME, ASYMMETRIC INFORMATION, THE BID, AND THE ASK

1. Risk and Turnover in the Foreign Exchange Market 19
Philippe Jorion
Comment: Bernard Dumas

2. Bid-Ask Spreads in Foreign Exchange Markets: Implications for Models of Asymmetric Information 41
David A. Hsieh and Allan W. Kleidon
Comment: Zhaohui Chen
Comment: Antti Suvanto

3. Interdealer Trade and Information Flows in a Decentralized Foreign Exchange Market 73
William Perraudin and Paolo Vitale
Comment: Silverio Foresi
Comment: Alan Kirman

Charles Goodhart, Takatoshi Ito, and Richard Payne
Comment: Richard K. Lyons
5. Foreign Exchange Volume: Sound and Fury
   Signifying Nothing? 183
   Richard K. Lyons
   Comment: Mark D. Flood
   Comment: Antônio Mello

II. Speculation, Exchange Rate Crises, and Macroeconomic Fundamentals

6. Dynamic Hedging and the Interest Rate Defense 209
   Peter M. Garber and Michael G. Spencer
   Comment: Richard K. Lyons

7. Heterogeneous Behavior in Exchange Rate Crises 229
   Fabio C. Bagliano, Andrea Beltratti, and Giuseppe Bertola
   Comment: Lorenzo Bini-Smaghi
   Comment: Richard K. Lyons

8. Exchange Rate Economics: What’s Wrong with the Conventional Macro Approach? 261
   Robert P. Flood and Mark P. Taylor
   Comment: Andrew K. Rose
   Comment: Lars E. O. Svensson

9. Is There a Safe Passage to EMU? Evidence on Capital Controls and a Proposal 303
   Barry Eichengreen, Andrew K. Rose, and Charles Wyplosz
   Comment: José Viñals

Contributors 333
Author Index 337
Subject Index 341
Preface

The project that produced this volume was originally inspired by recent turbulence in the foreign exchange markets, including large movements in the value of the dollar and, especially, the collapse of the European exchange rate mechanism in the crises of 1992–93. Standard macroeconomic models seemed able at best to explain only some of these major movements and able to explain even fewer of the many lesser short-term movements in exchange rates. An alternative approach, based on the microstructure of the foreign exchange market, seemed worth exploring.

The project had three sponsors—the Bank of Italy, the National Bureau of Economic Research, and the Centre for Economic Policy Research—corresponding to the three coeditors of this volume. The conference itself was held at S.A.DI.BA., the Bank of Italy’s conference center in Perugia, on 1–2 July 1994. It managed to draw together, either as paper authors or as discussants, many of the economists throughout Europe and the United States who have worked on microstructure-relevant aspects of foreign exchange markets. The conference concluded with a panel discussion chaired by Antonio Fazio, Governor of the Bank of Italy, and featuring Andrew Crockett of the Bank for International Settlements, David Mulford of Credit Suisse First Boston, Ian Plenderleith of the Bank of England, and Fabrizio Saccomanni of the Bank of Italy.

From the beginning, the organizers were determined that the volume not be just another collection of the usual macroeconomic sort of papers. A focus on such features as the heterogeneity of participants in the foreign exchange market, trading volume, bid-ask spreads, and intradaily movements—all factors that are usually neglected in the standard approach—was considered essential. This is near-virgin territory for academic research, which alone makes it worth exploring.

That the microstructure approach is already well advanced in the case of equity markets shows that the task can be done. It calls for something more
than applying existing models to a new market, however. The structure of the foreign exchange market is inherently different from that of equity or commodity markets. It lacks their centralization and transparency, as many of the contributions here explain.

We must acknowledge from the outset of the book that the microstructure approach is a long way from being able to explain major movements in exchange rates. For the time being, we can hope only to have made progress in understanding the microstructure of the foreign exchange market for its own sake. Further aspirations, that the knowledge gained might provide building blocks for models of exchange rate determination, pertain to the future.

The editors would like to thank Antonio Fazio, Martin Feldstein, and Richard Portes, of the three sponsoring institutions, for their support, and in particular to thank the Bank of Italy for its hospitality.