

FEEDBACK

**A NEW FRAMEWORK FOR
MACROECONOMIC POLICY**

**ADVANCED STUDIES IN
THEORETICAL AND APPLIED ECONOMETRICS
VOLUME 10**

Managing Editors:

J.P. Ancot, Netherlands Economic Institute, Rotterdam,
The Netherlands

A.J. Hughes Hallett, University of Newcastle, U.K.

Editorial Board:

F.G. Adams, University of Pennsylvania, Philadelphia, U.S.A.

P. Balestra, University of Geneva, Switzerland

M.G. Dagenais, University of Montreal, Canada

D. Kendrick, University of Texas, Austin, U.S.A.

J.H.P. Paelinck, Netherlands Economic Institute, Rotterdam,
The Netherlands

R.S. Pindyck, Sloane School of Management, M.I.T., U.S.A.

H. Theil, University of Florida, Gainesville, U.S.A.

W. Welfe, University of Lodz, Poland

Books by David Andrew Kendrick

Programming Investment in the Process Industries

**Notes and Problems in Microeconomic Theory (with Samuel Bowles
and Peter Dixon)**

The Planning of Industrial Programs (with Ardy Stoutjesdijk)

Stochastic Control for Economic Models

**The Planning of Investment Programs in the Steel Industry (with
Alexander Meeraus and Jaime Alatorre)**

GAMS: An Introduction (with Alexander Meeraus)

A complete list of this series is on the final page.

FEEDBACK

A NEW FRAMEWORK

FOR

MACROECONOMIC

POLICY

by

David A. Kendrick

1988 **KLUWER ACADEMIC PUBLISHERS**

a member of the **KLUWER ACADEMIC PUBLISHERS GROUP**

DORDRECHT / BOSTON / LANCASTER



Distributors

for the United States and Canada: Kluwer Academic Publishers, 101 Philip Drive, Norwell, MA 02061, USA

for the UK and Ireland: Kluwer Academic Publishers, MTP Press Limited, Falcon House, Queen Square, Lancaster LA1 1RN, UK

for all other countries: Kluwer Academic Publishers Group, Distribution Center, P.O. Box 322, 3300 AH Dordrecht, The Netherlands

Library of Congress Cataloging in Publication Data

Kendrick, David A.

Feedback : a new framework for macroeconomic policy / by David A. Kendrick..

p. cm. -- (Advanced studies in theoretical and applied econometrics ; v. 10)

Bibliography: p.

Includes index.

1. Macroeconomics--Econometric models. 2. Control theory.

I. Title. II. Series.

HB172.E.K45 1987

339.5--dc19

87-20990
CIP

ISBN-13:978-94-010-7733-0 e-ISBN:978-94-009-2746-9

DOI:10.1007/978-94-009-2746-9

Copyright

© 1988 by Martinus Nijhoff Publishers, Dordrecht.

Softcover reprint of the hardcover 1st edition 1988

All rights reserved. No part of this publication may be reproduced, stored in a retrieval system, or transmitted in any form or by any means, mechanical, photocopying, recording, or otherwise, without the prior written permission of the publishers, Martinus Nijhoff Publishers, P.O. Box 163, 3300 AD Dordrecht, The Netherlands.

Preface

In the past fifteen years a new field of research has emerged in economics: the application of control theory methods to macroeconomics and to microeconomics. The papers and books which have resulted from this research are important to the development of theoretical and applied economics. However, they are inaccessible to many with interest in economics because of the technical nature of the discussion. This book attempts to make the macroeconomic portion of this literature more accessible by providing a discussion of the key issues using words and figures rather than mathematical symbols.

I would like to thank my mentors and colleagues in control theory and economics for their help over the years: Masanao Aoki, Michael Athans, Yaakov Bar-Shalom, Jeremy Bray, Arthur Bryson, Gregory Chow, Ray Fair, Laurie Henrikson, David Livesey, Raman Mehra, Alfred Norman, Robert Pindyck, Franklin Shupp, John Taylor, Lance Taylor, Peter Tinsley, Edison Tse, and Stephen Turnovsky.

In addition, I appreciate the help of Nancy McMeans

Preface

Richey who provided comments and suggestions on two drafts of this book. I would also like to thank the University Research Institute of the University of Texas at Austin for support during a sabbatical leave when much of this manuscript was written. Finally, I would like to thank the following individuals who read all or part of an earlier version of the manuscript and provided comments on it: Bob Andrews, Michael Athans, William Bard, Yaakov Bar-Shalom, Jeremy Bray, Gregory Chow, Jae-Ho Chung, Paul Coomes, Roger Craine, Douglas Dacy, Mario DePillis, Greg DeCoster, Valerie Dunnam, Ray Fair, Andy Hughes Hallet, Charles Kindleberger, Robert Pindyck, Congressman Dan Rostenkowski, Walt Rostow, Berc Rustem, Franklin Shupp, Robert Solow, Lester Thurow, Peter Tinsley, James Tobin, Edison Tse, Jon Wainwright, and Piyu Yue.

Contents

1. Introduction	1
2. Feedback : A Familiar Idea	12
Part I	
Feedback : A New Framework	
3. Goals	21
4. Dynamics	32
5. Uncertainty	41
Part II	
Policy in a Feedback Framework	
6. Feedback Rules	59
7. Confidence Intervals Again	67
8. Automatic Stabilizers Revisited	75
Part III	
Limitations	
9. The Choice of Criterion	87
10. Reactions to Policy	95
11. The Choice of Model	103
12. Multiple Decision Makers	116
Part IV	
Conclusions	
13. Conclusions	125
Notes	129
References	135
Index	143