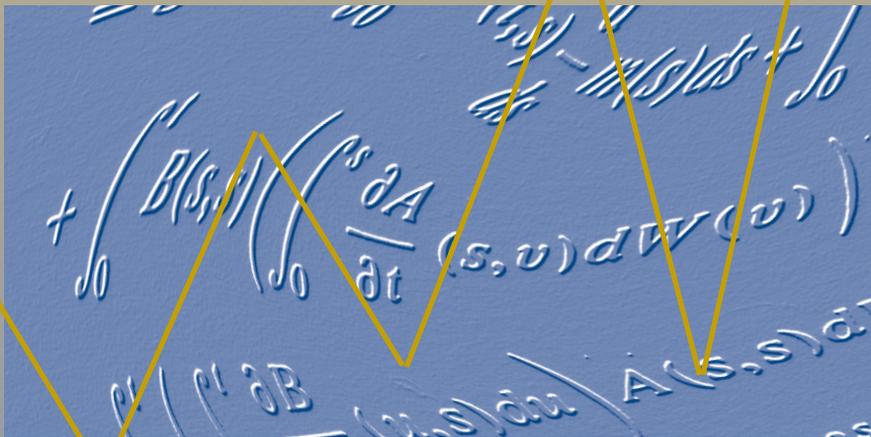


VOLUME 20, NUMBER 8, DECEMBER 2016

MACROECONOMIC DYNAMICS



EDITOR: WILLIAM A. BARNETT

CAMBRIDGE
UNIVERSITY PRESS

MACROECONOMIC DYNAMICS

Editor: William A. Barnett, University of Kansas, Department of Economics, 356 Snow Hall, 1460 Jayhawk Boulevard, Lawrence, KS 66045-7523, USA, and The Center for Financial Stability, 1120 Avenue of the Americas, 4th Floor, New York, NY 10036, USA.

Book Review Editors: Michele Boldrin, Department of Economics, Washington University, One Brookings Drive, St. Louis, MO 63130, and Universidad Carlos III, Madrid; Gregory D. Hess, President's Office, Wabash College, W. Wabash Avenue, Crawfordsville, IN 47933.

Special Issues Editors: Stephen Turnovsky, Department of Economics, Box 353330, University of Washington, Seattle, WA 98195; Lee Ohanian, Department of Economics, UCLA, 2261 Bunche Hall, 405 Hilgard Avenue, Los Angeles, CA 90024.

Editorial Information System Manager: Stephen E. Spear, Graduate School of Industrial Administration, Carnegie Mellon University, Pittsburgh, PA 15213.

Local Area Network Manager: Nathan Haley, Lawrence, Kansas.

Editorial Associate: Melinda Barnett, University of Kansas.

Advisory Editors:

Jean-Pascal Bénassy (*CEPREMAP, Paris*), Willem Buiter (*London School of Economics and Political Science, London*), Francis X. Diebold (*University of Pennsylvania*), Steven Durlauf (*University of Wisconsin*), Douglas Gale (*New York University*), Giancarlo Gandolfo (*Accademia Nazionale dei Lincei, Rome*), Roger Guesnerie (*DELTA, Paris*), Takatoshi Ito (*University of Tokyo*), Timothy Kehoe (*University of Minnesota*), Finn Kydland (*Carnegie Mellon University*), Lung-Fei Lee (*Ohio State University*), Adrian Pagan (*Sydney University, Australia*), Robert Townsend (*Massachusetts Institute of Technology*), Mark Watson (*Princeton University*), Kenneth West (*University of Wisconsin*), Michael Woodford (*Columbia University*), Randall Wright (*University of Wisconsin, Madison*)

Associate Editors:

Gaetano Antinolfi (*Washington University*), Jasmina Arifovic (*Simon Fraser University*), Pierpaolo Benigno (*LUISS Guido Carli, Rome*), Joydeep Bhattacharya (*Iowa State University*), Volker Böhm (*University of Bielefeld, Germany*), Benjamin Born (*University of Bonn, Germany*), Hafedh Bouakez (*HEC Montreal, Canada*), Raouf Boucekkine (*Université Catholique de Louvain, Belgium*), Jeffrey Campbell (*Federal Reserve Bank of Chicago*), Shankha Chakraborty (*University of Oregon*), Marcelle Chauvet (*University of California at Riverside*), Christophe Deissenberg (*University d'Aix-Marseille II*), Juan Dolado (*European University Institute, Italy*), Huberto Ennis (*Federal Reserve Bank of Richmond*), Alvaro Escribano (*Universidad Carlos III de Madrid, Spain*), Emilio Espino (*Universidad Torcuato di Tella, Argentina*), George Evans (*University of Oregon*), Ester Faia (*Goethe University of Frankfurt*), Roger Farmer (*UCLA*), Luisa Fuster (*Universidad Carlos III de Madrid, Spain*), Oded Galor (*Brown University and Hebrew University of Jerusalem*), Luca Gambetti (*Universitat Autònoma de Barcelona*), Antonio Guarino (*University College, London*), Thorvaldur Gylfason (*University of Iceland*), Niels Haldrup (*Aarhus University, Denmark*), John Hassler (*Stockholm University*), Moshe Hazan (*Tel-Aviv University*), Per Hjertstrand (*Research Institute of Industrial Economics, Sweden*), Cars Hommes (*University of Amsterdam, The Netherlands*), Kevin Huang (*Vanderbilt University*), Fredj Jawadi (*Université d'Evry, France*), Leo Kaas (*University of Konstanz, Germany*), Takashi Kamihigashi (*Kobe University, Japan*), John Keating (*University of Kansas*), Todd Keister (*Rutgers University*), Moritz Kuhn (*University of Bonn*), David Lagakos (*University of California, San Diego*), Blake LeBaron (*Brandeis University*), Iouri Manovskii (*University of Pennsylvania*), David Marshall (*Federal Reserve Bank of Chicago*), Alfredo Medio (*University of Udine, Italy*), Qinglai Meng (*Oregon State University*), Jianjun Miao (*Boston University*), Kaushik Mitra (*University of Birmingham, UK*), Omer Moav (*The Hebrew University of Jerusalem*), Cyril Monnet (*University of Bern, Switzerland*), Gernot Müller (*University of Tübingen, Germany*), Lee Ohanian (*UCLA*), Patrick Pintus (*Université de la Méditerranée & GREQAM, France*), Julien Prat (*CNRS, CREST, France*), Bruce Preston (*Monash University, Australia*), Francisco Ruge-Murcia (*McGill University, Canada*), Gilles Saint-Paul (*CEPREMAP, France*), Argia M. Sbordone (*Federal Reserve Bank of New York*), Apostolos Serletis (*University of Calgary, Canada*), Tony Smith (*Yale University*), Gerhard Sorger (*University of Vienna, Austria*), Stephen Spear (*Carnegie Mellon University*), George Tavlas (*Bank of Greece*), Stephen Turnovsky (*University of Washington*), Farshid Vahid (*Monash University, Australia*), Nicolaas Vriend (*Queen Mary, University of London*), Neng Wang (*Columbia University*), Ronald Wendner (*University of Graz, Austria*), Francesco Zanetti (*University of Oxford*)

MACROECONOMIC DYNAMICS

Volume 20, Number 8, December 2016

Special Issue on

*Technology Aspects in the Process
of Development*

Edited by

Théophile T. Azomahou, Raouf Boucekkine,
Pierre Mohnen, and Bart Verspagen

CAMBRIDGE
UNIVERSITY PRESS

MACROECONOMIC DYNAMICS

Volume 20, Number 8, December 2016

Contents

Special Issue on *Technology Aspects in the Process of Development*

**Edited by Théophile T. Azomahou, Raouf Boucekkine, Pierre Mohnen,
and Bart Verspagen**

ARTICLES

- Introduction to *Macroeconomic Dynamics* Special Issue on Technology
Aspects in the Process of Development
**Théophile T. Azomahou, Raouf Boucekkine, Pierre Mohnen,
and Bart Verspagen** 1953
- Optimal Public Investment, Growth, and Consumption: Evidence from
African Countries
**Augustin Kwasi Fosu, Yoseph Yilma Getachew, and
Thomas H. W. Ziesemer** 1957
- How Important Is Innovation? A Bayesian Factor-Augmented
Productivity Model Based on Panel Data
Georges Bresson, Jean-Michel Etienne, and Pierre Mohnen 1987
- The Dynamics of Stagnation: A Panel Analysis of the Onset and
Continuation of Stagnation
Richard Bluhm, Denis de Crombrughe, and Adam Szirmai 2010
- Endogenous Fertility with a Sibship Size Effect
Elise S. Brezis and Rodophe Dos Santos Ferreira 2046
- Human Capital Productivity, Endogenous Growth, and Welfare:
The Role of Uncertainty
Mbaye Diene, Bity Diene, and Théophile T. Azomahou 2067
- Social Capital as an Engine of Growth: Multisectoral Modeling
and Implications
Youyou Baende Bofota, Raouf Boucekkine, and Alain Pholo Bala 2093
- A Dynamic Model of Taxation, Corruption, and Public Investment in the
Dynastic Cycle: The Case of Imperial China
Kenneth S. Chan and Jean-Pierre Laffargue 2123
- Connectivity and Economic Growth
Adriaan van Zon and Evans Mupela 2148
- Optimal Endogenous Growth with Natural Resources: Theory
and Evidence
Manh-Hung Nguyen and Phu Nguyen-Van 2173

SUBSCRIPTION INFORMATION: *Macroeconomic Dynamics* (ISSN 1365-1005) is published eight times a year in January, March, April, June, July, September, October, and December. Annual subscription rates for Volume 20, 2016: Institutional rate is (print and electronic) \$1277.00 in the USA, Canada, and Mexico, £771.00 + VAT elsewhere. Institutional rate (electronic only) \$932.00 in the USA, Canada, and Mexico, £569.00 + VAT elsewhere. Institutional rate (print only) \$1183.00 in the USA, Canada, and Mexico, £702.00 + VAT elsewhere. Individual rate is (print and electronic) \$260.00 in the USA, Canada, and Mexico, £148.00 + VAT elsewhere. Individual rate (print only) \$252.00 in the USA, Canada, and Mexico, £145.00 + VAT elsewhere. Students (print only) \$128.00 in the USA, Canada, and Mexico, £48.00 + VAT elsewhere. For members of the Econometric Society, the Society for the Advancement of Economic Theory, the Society for Nonlinear Dynamics and Econometrics, the Society for Computational Economics, and the Society for the Promotion of Economic Theory the rate is \$100.00 in the USA, Canada, and Mexico, £62.00 + VAT elsewhere. Institutional access is via IP address range(s) or domain name(s); individual subscriber access is via a username and password. Prices include postage; airmail is extra. Write to Cambridge University Press, One Liberty Plaza, New York, NY 10006, or outside the USA, Canada, and Mexico to Cambridge University Press, University Printing House, Shaftesbury Road, Cambridge CB2 8BS, UK. Claims for missing issues should be made immediately after receipt of the next issue.

Periodicals postage at New York, NY and additional mailing offices. Postmaster: send address changes in the USA, Canada, and Mexico to: *Macroeconomic Dynamics*, Cambridge University Press, One Liberty Plaza, New York, NY 10006, USA. Send address changes elsewhere to: *Macroeconomic Dynamics*, Journals Dept., Cambridge University Press, University Printing House, Shaftesbury Road, Cambridge CB2 8BS, UK.

© 2016 Cambridge University Press. Photocopying information for users in the USA: The Item-Fee Code for this publication indicates that copying for internal or personal use beyond that permitted by Section 107 or 108 of the US Copyright Law is authorized for users duly registered with the Copyright Clearance Center (CCC) Transactional Reporting Service, provided that the appropriate remittance of \$18.00 per article is paid directly to: CCC, 222 Rosewood Drive, Danvers, MA 01923. Specific written permission must be obtained from the publisher for all other copying. The Item-Fee Code for this journal is 1365-1005/16 \$18.00.

ISI Tearsheet Service, 3501 Market Street, Philadelphia, PA 19104, USA is authorized to supply single copies of separate article for private use only. Article reprints are available from the authors. For orders of 50 or more reprints, contact Cambridge University Press.

Macroeconomic Dynamics is indexed in EconLit; The Journal of Economic Literature (e-JEL and JEL on CD); ISI: Current Contents/Social & Behavioral Sciences; Social Sciences Citation Index; Research Alert; Mathematical Reviews; MathSciNet; Zentralblatt für Mathematik.

EDITORIAL POLICY

Macroeconomic Dynamics publishes research of the highest theoretical, empirical or quantitative sophistication. Papers of high quality are welcomed from all areas of advanced macroeconomics and allied fields, so long as the research is founded in a rigorous scientific approach. Major advances in macroeconomics without immediate policy applications also are accepted, if they show potential for application in the future. Occasional book reviews, software reviews, announcements, conference proceedings and interviews are published.

An **electronic version of the journal** is published just prior to the paper version at journals.cambridge.org/mdy. Access to the full-text articles of the electronic version will be limited to institutional subscribers of the hard copy version of the journal, with access available to all online users at that institution's registered domain. Tables of Contents, abstracts, searching and alerting services will remain free of charge. To view the full text of *Macroeconomic Dynamics*, you will need to use the Adobe Acrobat Reader software. If you do not have a copy already, you can get it free of charge. Just follow the link from our Cambridge Journals Online home page, download it, and install it as a plug-in helper application for your browser.