

TRANSFORMING MODERN MACROECONOMICS

EXPLORING DISEQUILIBRIUM
MICROFOUNDATIONS, 1956–2003



Roger E. Backhouse • Mauro Boianovsky

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Transforming Modern Macroeconomics

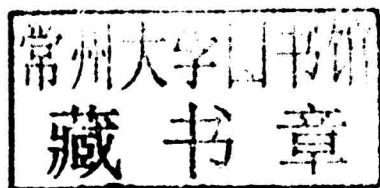
Exploring Disequilibrium Microfoundations, 1956–2003

ROGER E. BACKHOUSE

University of Birmingham

MAURO BOIANOVSKY

Universidade de Brasília



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TRANSFORMING MODERN MACROECONOMICS

This book tells the story of the search for non-Walrasian microfoundations for macroeconomic theory, from the disequilibrium theories of Patinkin, Clower, and Leijonhufvud to recent dynamic stochastic general equilibrium models with imperfect competition. Placing this search against the background of wider developments in macroeconomics, the authors contend that this was never a single research program, but involved economists with very different aims who developed the basic ideas about quantity constraints, spillover effects, and coordination failures in different ways. The authors contrast this with the equilibrium approach of Phelps and Lucas, arguing that equilibrium theories simply assumed away the problems that had motivated the disequilibrium literature. Although equilibrium Walrasian models came to dominate macroeconomics, non-Walrasian theories never went away and continue to exert an important influence on the subject. Although this book focuses on one strand in modern macroeconomics, it is crucial to understanding the origins of modern macroeconomic theory.

Roger E. Backhouse is Professor of the History and Philosophy of Economics at the University of Birmingham, where he has taught since 1980, and at the Erasmus University Rotterdam. He is co-editor (with Philippe Fontaine) of *The History of the Social Sciences since 1945* (2010) and (with Bradley W. Bateman) *The Cambridge Companion to Keynes* (2006). He is co-author (with Bradley W. Bateman) of *Capitalist Revolutionary: John Maynard Keynes* (2011) and author of *The Puzzle of Modern Economics* (2010), and *The Ordinary Business of Life* (2001), published in the United Kingdom as *The Penguin History of Economics* (2002).

Mauro Boianovsky is Professor of Economics at Universidade de Brasília, where he has taught since 1996. He is the editor of *Business Cycle Theories: Selected Texts, 1860–1939* (2008) and co-editor (with Kevin Hoover) of *Robert Solow and the Development of Growth Economics* (2009). He has written for a number of journals including the *History of Political Economy*, the *Cambridge Journal of Economics*, the *European Journal of the History of Economic Thought*, *Structural Change and Economic Dynamics*, and the *Journal of the History of Economic Thought*.

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Dedicated to the memory of Edward Backhouse (1919–1988)
and David Luiz Boianovsky (1932–1996)

Preface

We began working on the topic of disequilibrium macroeconomics when we were both visiting Duke University, in the first semester of 2003. By 2005, we had three papers written, but we were having problems dividing the material into self-contained papers of a length with which journal editors would be happy. Our first paper, from which material for several chapters of the current book was drawn, grew to around 20,000 words, while the other papers, though of more reasonable length, took material out of the broader context. Although reactions to the papers were favorable, the almost universal response was “But you also need to say something about x , y , and z .” We also came to see that disequilibrium macroeconomics was far more central to the transformation of macroeconomics that has taken place since the 1950s than we had realized. For several years, we both put this work aside and turned to other projects. Prompted by the growing interest in the history of recent economics, and macroeconomics in particular, we eventually decided that it was time to write our material into a book on the search for disequilibrium microfoundations for macroeconomics, adding the material that was needed to fill out the story. This book is the result. Although based on our earlier discussion papers, and although Turnitin would no doubt detect matching text, the material has been completely rewritten.

For one of us (Backhouse), this project presents a new challenge in that we are writing about a literature to which he once tried to contribute. However, sufficient time has passed (the work dates from 1974, was used in a thesis in 1976, and then was published between 1980 and 1982) for it to be possible to look back on this as a historical episode. More important, having subsequently chosen to specialize in the history and methodology of economics, not in macroeconomics, no credibility issues are at stake. In any case, these papers, published when the profession was moving away from this subject, were incidental and are mentioned only in footnotes.

We are grateful to participants in the story we tell who were willing to write, sometimes at great length, responding to questions and commenting on draft material: Robert Barro, Jacques Drèze, John Fender, Jean-Michel Grandmont, Frank Hahn, Geoff Harcourt, Peter Howitt, Axel Leijonhufvud, Edmond Malinvaud, Richard Portes, Robert Solow, and David Winter. We owe a particular debt to Jean-Pascal Bénassy for his careful reading of a large part of the manuscript and his advice on how the structure of the book could be improved. We also benefited from the comments of two anonymous referees who made many valuable suggestions. The usual caveat applies: none of them should be blamed for the use we have, or have not, made of their ideas.

None of the material here has been previously published, though much of it was circulated, in 2004–2007, as discussion papers and was discussed at conferences and seminars, including the History of Economics Society, the European Society for the History of Economic Thought, the Brazilian Economic Society (ANPEC), the University of Birmingham, Université Catholique de Louvain, London Metropolitan University, University of Paris I, and Hitotsubashi University. A version of the material in Chapter 7 was presented at a conference on “General Equilibrium as Knowledge” at the University of Paris I (Sorbonne-Pantheon), in September 2007. We are grateful to participants in these events for helping us clarify many ideas and drawing out attention to points that we had overlooked.

Some chapters in this book draw on material from the Patinkin, Clower, Leijonhufvud, Modigliani, and Solow Papers, held as part of the Economists’ Papers Project in the David M. Rubenstein Rare Book and Manuscript Library at Duke University. We are grateful to the archivists, including Will Hansen and Elizabeth Dunn, who have been unfailingly helpful. We are grateful to Robert Barro, Earlene Clower, Jan Kregel, Axel Leijonhufvud, Robert Solow, and Roy Weintraub for permission to quote from unpublished papers and correspondence.

Dramatis Personae

This provides selected biographical information on the leading figures in the search for disequilibrium microfoundations, focusing on facts that are relevant to this. Further biographical information on many of these figures is provided in the main text. If no country of birth is given, it is the United States. Qualifications other than the Ph.D. are given only if the person did not obtain a Ph.D. or an equivalent. Honorary and higher doctorates are ignored. Affiliations listed are, with some exceptions, confined to the economists' main positions and exclude visiting and emeritus positions.¹ There is ambiguity in listing emeritus positions, which reflects the ambiguity over the point at which many academics cease to be actively involved in research.

Abbreviations: CEPREMAP – Centre pour la recherche économique et ses applications; CNRS – Centre national de la recherche scientifique; INSEE – Institut national de la statistique et des études économiques; LSE – London School of Economics; MIT – Massachusetts Institute of Technology; UCLA – University of California Los Angeles.

Alchian, Armen A. (1914–; Ph.D. Stanford 1944; UCLA and RAND 1946–) An industrial economist known mainly for his work on industrial economics and property rights, he was an early contributor to the literature on decision making when information is costly. Although he did not contribute directly to the disequilibrium macroeconomics literature, he was an important contributor to the Phelps volume (Phelps et al. 1970) and an influence on the early work of Axel Leijonhufvud.

¹ Economists are highly mobile and full listings of affiliations would exhaust the reader's patience. More detailed information can be found in volumes such as Blaug (1999) from which many of the dates have been taken (corrected and updated from a variety of sources, notably the subjects and their universities' Web pages). For some, the affiliations listed here represent a great simplification of their institutional connections.

Arrow, Kenneth J. (1921–; Ph.D. Columbia 1953; Stanford 1953–68, Harvard 1968–79, Stanford 1979–) An influential figure in many fields of economics and creator, with Gérard Debreu, of what became the canonical model of general competitive equilibrium; he listed, in 1959, a series of “scandals” in general equilibrium theory that stimulated others to construct models of general equilibrium with imperfect competition. He co-authored with Frank Hahn a graduate textbook *General Competitive Analysis* (1971) that covered Keynesian problems.

Barro, Robert J. (1944–; Ph.D. Harvard 1970 Brown 1968–73, Chicago 1973–84, Rochester 1975–87, Harvard 1987–) When at Brown, he co-authored, with Herschel Grossman, one of the most-cited articles on disequilibrium microfoundations (1971). After his move to Chicago, he became one of the most prominent new classical macroeconomists, his work on Ricardian equivalence and output-inflation trade-offs being particularly influential.

Bénassy, Jean-Pascal (France 1948–; Ph.D. Berkeley 1973; CEPREMAP 1973–, CNRS 1975–, Laboratoire d'économie politique, Ecole Normale Supérieure 1984–88) His Ph.D, supervised by Gérard Debreu and Bent Hansen, on disequilibrium theory extended the theory of general equilibrium to non-clearing markets. He continued to work on disequilibrium microfoundations and sought to integrate the economics of non-market clearing with imperfect competition.

Blanchard, Olivier (France 1948–; Ph.D. MIT 1977; Harvard 1977–83, MIT 1983–) A leading new Keynesian, he wrote widely used textbooks including a graduate macroeconomics textbook co-authored with Stanley Fischer.

Clower, Robert Wayne (1926–2011; MLitt Oxford 1952, DLitt Oxford 1978; Washington State 1948–49, 1952–56, Northwestern 1957–71, UCLA 1972–86, South Carolina, 1986–2001) As author of the “dual-decision hypothesis,” he is, along with Axel Leijonhufvud, with whom he worked at UCLA, one of the two economists usually credited with being the origin of disequilibrium macroeconomics.

Debreu, Gérard (France, 1921–2004; DSc (mathematics) Paris, 1956 CNRS 1946–48, Cowles Commission at Chicago 1950–55, Cowles Commission at Yale 1955–61, Berkeley 1962–86) Creator with Kenneth Arrow of the canonical model of general competitive equilibrium, he did not work on disequilibrium theory himself, but supervised the Ph.D.s of Jean-Pascal Bénassy and Jean-Michel Grandmont.

Dixit, Avinash (India, 1944–; Ph.D. MIT 1968, Berkeley 1968–69, Oxford 1970–74, Warwick 1974–80, Princeton 1981–) An economic

theorist working primarily on industrial economics, international trade, and investment, he was co-author with fellow MIT student Joseph Stiglitz of a significant paper on disequilibrium macroeconomics.

Drazen, Allan (1950–; Ph.D. MIT 1976; Chicago 1976–82, Tel Aviv 1982–90, Maryland 1990–) One-time assistant to Don Patinkin, author of an important survey of the disequilibrium macroeconomics in 1980. His subsequent work focused on macroeconomics and political economy.

Drèze, Jacques (Belgium, 1929–; Ph.D. Columbia 1958; Carnegie Tech 1957–58, Louvain 1958–89, Chicago 1964–68) Economic theorist and industrial economist focusing on decision making under uncertainty, he was author of a widely discussed concept of equilibrium with rationing in 1975. He was closely associated with the group centered on CEPREMAP.

Fischer, Stanley (Zambia, 1943–; Ph.D. MIT 1969; Chicago 1969–70, MIT 1973–, World Bank 1988–90, IMF 1994–2001, Citigroup 2001–05, Bank of Israel 2005–) Macroeconomist and author, with Chicago graduate and MIT colleague Rudiger Dornbusch (1942–2002), of a widely used intermediate macroeconomics textbook and, with Olivier Blanchard, of an influential graduate macroeconomics textbook. Author of important survey articles on inflation and monetary economics in the mid-1970s.

Flemming, John S. (United Kingdom, 1941–2003; MA Oxford 1966; Oxford 1963–80; Bank of England 1980–91, European Bank for Reconstruction and Development 1991–93, Oxford 1993–2003) Author of article applying ideas of disequilibrium and rationing to the consumption function in 1973.

Grandmont, Jean-Michel (France, 1939–; Ph.D. Berkeley 1971; CNRS and CEPREMAP 1970–96, École polytechnique 1992–) His Ph.D. supervised by Gérard Debreu, he was the author of a series of papers, many co-authored with colleagues associated with CEPREMAP, on equilibrium in a monetary economy.

Grossman, Herschel I. (1939–2004; Ph.D. Johns Hopkins 1965; Brown 1964–2004) Co-author with Robert Barro of the influential 1971 article. He worked on both disequilibrium and equilibrium models of the effects of monetary policy, and from there, he moved into positive analysis of economic policy more generally.

Hahn, Frank H. (Germany, 1925–; Ph.D. London 1951; Birmingham 1948–60, Cambridge 1960–66 and 1972–92, LSE 1967–72, Siena 1989–) An economic theorist who focused on general equilibrium and the theory of money, he contributed to the early development of models of general equilibrium with imperfect competition and the study of non-tâtonnement processes. He co-authored, with Kenneth Arrow, *General Competitive*

Analysis (1971) and, with Robert Solow, a book on macroeconomic theory (1995). In the late 1970s, he worked with a group of young theorists on information and missing markets and explored what he called “conjectural equilibria.”

Hansen, Bent (Denmark, 1920–2002; Fil Dr. Uppsala 1951; Uppsala 1947–55, National Institute of Economic Research [Stockholm] 1955–64, Institute of Planning [Cairo] 1962–65, Berkeley 1966–87) Hansen’s doctoral thesis, which turned into *A Study in the Theory of Inflation* (1951), took what could be called a general disequilibrium approach to inflation. Author of a book-length survey of general equilibrium systems, he was, with Gérard Debreu, one of the supervisors of Jean-Pascal Bénassy’s important Ph.D. thesis.

Harcourt, Geoffrey C. (Australia, 1931–; Ph.D. Cambridge 1960; Adelaide 1958–85, Cambridge 1982–98) The author of a macroeconomics textbook and a very widely cited survey of capital theory, he became involved with assisting John Hicks in organizing an International Economic Association conference on the microfoundations of macroeconomics in 1975, published in 1977.

Hart, Oliver (United Kingdom, 1948–; Ph.D. Princeton 1974; Essex 1974–75, Cambridge 1975–81, LSE 1982–85, MIT 1985–93, Harvard 1993–) An economic theorist who focused on the theory of firms and market structure. At Cambridge in the late 1970s, he was part of a group of young economists working with Frank Hahn on problems of information and missing markets, using monopolistic competition to show how Keynesian problems could arise.

Hicks, John R. (United Kingdom, 1904–1989; BA 1925; LSE 1929–35, Cambridge 1935–38, Manchester 1938–46, Oxford 1946–65) Widely regarded as Britain’s leading economic theorist in the 1930s, he was responsible for the IS-LM model (1937) and *Value and Capital* (1939), which inspired much post-war work on general equilibrium theory. In the 1970s, he questioned the Keynesianism he had helped to create and he was the inspiration behind the 1975 International Economic Association conference on the microeconomic foundations of macroeconomics (Harcourt 1977).

Howitt, Peter (Canada, 1946–; Ph.D. Northwestern 1973; Western Ontario 1972–96, Ohio State University 1996–2000, Brown 2000–) He worked on problems of coordination and monetary economics in the 1970s, co-authoring papers with both Robert Clower and Don Patinkin, contributing to the *American Economic Review* symposium on disequilibrium macroeconomics in 1979. He eventually came to be close to Leijonhufvud in promoting computable, agent-based modeling.

Johnson, Harry G. (Canada, 1923–79; Ph.D. Harvard 1958; St Francis Xavier 1943–44, Toronto 1946–47, Cambridge 1949–56, Manchester 1956–59, Chicago 1959–74 and 1979, LSE 1966–74, Geneva 1976–79) A specialist in international economics and one of the most prolific economists in the 1960s and 1970s, he was an influential interpreter of the Keynesian revolution and publicist for the work of Axel Leijonhufvud.

Keynes, John Maynard (United Kingdom, 1883–1946; MA 1905; Cambridge 1908–42) The economist whose work lies behind the search for disequilibrium microfoundations.

Kornai, Janos (Hungary, 1928; Hungarian Academy of Sciences 1955–58 and 1963–93) A specialist on planning in centrally planned economies, his book *Anti-Equilibrium* (1971) contributed to the growing interest in disequilibrium theory in the early 1970s.

Lange, Oskar (Poland, 1904–65; LLD Krakow 1928; Krakow 1931–35, Michigan 1943, Cowles Commission at Chicago 1943–45, Warsaw 1955–65) While in Chicago he attempted to reinterpret Keynesian theory in terms of Walrasian general equilibrium theory and helped establish the neoclassical synthesis view of Keynesian economics. His work provided the starting point for Don Patinkin, who had attended his lectures in Chicago.

Laroque, Guy (France 1946–; DEA 1971; INSEE 1982–) Working with Jean-Michel Grandmont and others, he was responsible for a series of papers on temporary equilibrium with rationing in the mid-1970s.

Leijonhufvud, Axel (Sweden 1933–; Ph.D. Northwestern 1967; UCLA 1964–94, Trento 1994–) His Ph.D. dissertation, which became *On Keynesian Economics and the Economics of Keynes* (1968), inspired many economists to work on problems of disequilibrium. Along with his UCLA colleague Robert Clower, he remained distant from the literature drawing on Barro and Grossman (1971) that emerged in the 1970s, and focused on more general problems of coordination, eventually taking up computable economics.

Lucas, Robert E. (1937–; Ph.D. Chicago 1964; Carnegie Mellon 1963–74, Chicago 1974–) Arguably the key figure, along with Robert Barro, Thomas Sargent, and others, in the rise of the new classical macroeconomics on account of two papers, published in 1972 and 1976.

Malinvaud, Edmond (France 1923–; Diplôme 1948; INSEE 1948–56, 1967–71, 1974–87, ENSAE 1957–66, College de France 1987–) Author of many works on the theory of intertemporal allocation of resources and econometric theory in the 1950s and 1960s and of a graduate microeconomics textbook, he wrote a very widely cited account of disequilibrium theory (1977).

Mankiw, N. Gregory (1958–; Ph.D. Princeton 1984; Harvard 1985–) A leading New Keynesian macroeconomist and author of widely used textbooks on introductory economics and intermediate macroeconomics.

Modigliani, Franco (Italy 1918–2003; Ph.D. New School 1944; Barnard College 1942–44, New School, 1943–44 and 1946–48, Illinois 1949–52, Carnegie Tech 1952–60, Northwestern 1960–62, MIT 1962–2003) The author of an article (1944) that interpreted Keynesian economics in terms of wage stickiness, he was one of the leading Keynesians in the age of the neoclassical synthesis, as well as being active in macroeconomic model building and writing, with Merton Miller, influential papers in the theory of finance.

Muellbauer, John (Germany 1944–; Ph.D. Berkeley 1975; Warwick 1969–72, Birkbeck College London 1972–81, Oxford 1981–) A specialist in the economics of consumption he was co-author, with Richard Portes, of a dynamic extension of disequilibrium theory in 1978.

Neary, Peter (Ireland, 1950–; DPhil Oxford 1978; Economic and Social Research Institute Dublin, 1970–72, Trinity College Dublin 1972–74 and 1978–, Oxford 1976–78) A specialist in the theory of international trade, he co-authored, with Joseph Stiglitz, a model that modeled expectations of quantity constraints on behavior (1983).

Negishi, Takashi (Japan 1933–; Ph.D. Tokyo 1965; Stanford 1958–60, Tokyo 1965–94, Aoyama Gakuin 1994–) A general equilibrium theorist, he developed some of the earliest models of equilibrium with monopolistic competition and in subsequent years produced a range of theories that he summed up as *Economic Theories in a Non-Walrasian Tradition* (1985).

Patinkin, Don (1922–1995; Ph.D. Chicago 1947; Illinois 1948–49, Hebrew University Jerusalem 1949–97) His *Money, Interest, and Prices* (1956, 1965), both laid a theoretical foundation for the neoclassical synthesis and derived the quantity-constraint spillover effects that were central to the disequilibrium macroeconomic literature. After this book, most of his time was spent on other areas of economics, from the Israeli economy to the theory of money and the history of the Keynesian revolution.

Phelps, Edmund S. (1933–; Ph.D. Yale 1959; Yale 1959–66, Pennsylvania 1966–71, Columbia 1971–) He was responsible for the “Phelps volume” (Phelps et al. 1970) that opened up the information-theoretic explanations of unemployment that were developed by Robert Lucas into what became the new classical macroeconomics, though his own work took him in different directions.

Portes, Richard (1941; Ph.D. Oxford 1969; Princeton 1969–72, Birkbeck College London 1972–94, London Business School 1995–) A specialist in

the control of enterprises in centrally planned economies, who overlapped briefly with Richard Quandt at Princeton, he co-authored a dynamic extension of the fixed-price model in 1978 and undertook a series of papers, many co-authored with David Winter, on estimating disequilibria in East European countries.

Quandt, Richard (Hungary 1930–; Ph.D. Harvard 1957; Princeton 1956–) A microeconomic theorist (and author of a widely used textbook) and econometrician, who focused on the estimation of non-linear models and of markets with rationing.

Samuelson, Paul A. (1915–2009; Ph.D. Harvard 1941; MIT 1940–2009) One of the leading U.S. Keynesians who created the 45-degree line model that, together with the IS-LM model, dominated the teaching of Keynesian economics. He invented the term “neoclassical synthesis.”

Solow, Robert M. (1924–; Ph.D. Harvard 1951; MIT 1950–) One of the most prominent Keynesian economists of the Keynesian era, he co-authored, with Joseph Stiglitz, a model of macroeconomic disequilibrium that was published in 1968, three years before the Barro-Grossman model. A later paper, co-authored with Ian M. McDonald, added to the new Keynesian literature a model of a monopoly union, and he co-authored a book with Frank Hahn challenging the new classical conception of how markets work.

Stiglitz, Joseph E. (1943–; Ph.D. MIT 1966; MIT 1966–67, Yale 1967–74, Stanford 1974–76 and 1988–2001, Oxford 1976–79, Princeton 1979–88, World Bank 1997–2000, Columbia 2001–) He was the co-author, with Robert Solow, of an early model of equilibrium with rationing, but his main work has been on markets with asymmetric information. He became a prominent New Keynesian on account of his use of asymmetric information to explain why labor markets might not clear and why there might be rationing in capital markets.

Weintraub, E. Roy (1943–; Ph.D. Pennsylvania 1969; Rutgers 1968–70, Duke 1970–) A general equilibrium theorist he wrote a prominent survey that focused attention on the term “microfoundations” in 1977.

Weintraub, Sidney (1914–83, Ph.D. New York University 1941; New School 1951–57, Pennsylvania 1950–83) A Keynesian economist who was responsible for developing Keynes’s theory as a theory of aggregate demand and supply, which he applied to problems of inflation and income distribution. He is often credited with being the first to use the term “microfoundations.”

Winter, David F. (United Kingdom, 1945–; MA Pennsylvania 1970; Sussex 1974–75, Birkbeck 1975–77, Bristol 1977–) Co-author, with Richard

Portes, of a series of articles on the estimation of disequilibrium systems in Eastern European countries.

Woodford, Michael (1955–; Ph.D. MIT 1983; Columbia 1984–86 and 1995–, Chicago 1986–95) Author of *Interest and Prices* (2003), widely taken to be the definitive statement of the new neoclassical synthesis that integrated real business cycle theory with new Keynesian economics.

Younès, Yves (Tunisia, 1937–1996; Tunis; CEPREMAP) A co-author, with Edmond Malinvaud, Jean-Michel Grandmont, and others at CEPREMAP, of articles on the theory of general equilibrium with quantity rationing in the mid-1970s.

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