inside the Eurozone, and illustrates how the simple tools described in earlier chapters can make these problems easier to understand.

I have two quibbles about the book. First, the discussion of quantitative easing in chapter 7 is unsatisfactory; the authors simply assert that it does not work. A bit more discussion on this topic would not have been amiss. The other is that the book would have benefited from a short section at the end of each chapter pointing the interested reader towards further reading on the key economic ideas raised. Overall, however, the book is a valuable contribution to the growing literature on Keynes. It may prove particularly useful for students new to economics as a complement to an introductory macroeconomics textbook in giving them the intellectual foundations of the IS-LM framework with which they will be grappling.

David Chambers is reader in finance and a Keynes Fellow at Judge Business School, Cambridge University. His research interests span asset management and financial history, and he has published in the Journal of Finance, *the* Journal of Financial and Quantitative Analysis, *the* Journal of Economic Perspectives, *the* Economic History Review, Explorations in Economic History, Business History, *and the* Journal of Portfolio Management. *He also directs the Newton Centre for Endowment Asset Management at Judge Business School.*

. . .

Finding Equilibrium: Arrow, Debreu, McKenzie, and the Problem of Scientific Credit. *By Till Düppe and E. Roy Weintraub*. Princeton: Princeton University Press, 2014. xxv + 276 pp. Photographs, references, index. Cloth, $39.50. ISBN: 978-0-691-15664-4.

doi:10.1017/S0007680515000422

Reviewed by Tobias F. Rötheli

This remarkable text recounts the developments leading up to an outstanding achievement in modern economic theory. The matter at issue is the clarification of a long-standing conjecture in economics concerning the question of whether there exists a set of prices for a market economy populated by profit-seeking firms and utility-maximizing consumers that brings all markets to a state of equilibrium. The existence of this "general equilibrium," in which all supplies match their corresponding demands, was conjectured in the 1870s by Leon Walras, but the mathematical techniques needed to rigorously address this proposition did not become available until well into the twentieth century. This book, by Till Düppe and Roy Weintraub, tracks the course of economic theory, particularly during the 1930s, the war years, and the immediate postwar years. Several elements are described as critical in this process of scientific

discovery. First, the war years brought a range of practically important planning problems to the attention of the research community. Planning, for example, is the optimal organization of a production process, that is, the efficient combination of inputs to achieve a desired mix of outputs. Optimized planning was a practical challenge for the U.S. economy, which during the war years had many elements of a planned economy. The solution of planning problems—including such specific war-related tasks as finding the optimal size and organization of a ship convoy that is under threat of submarine attacks—was made possible by a set of algorithms that constitute the core of the field that became known as operations research. The relatively small number of applied mathematicians who developed these techniques worked in organizations like the RAND Corporation and the Cowles Commission and in just a few academic departments.

The book details how the development of these mathematical tools for top-down planning worked their way into groups of researchers who, once the war was over, were eager to get back to addressing research questions of more general importance. This is one of the intriguing and paradoxical turns in the history of economics, where the necessities of war (and of limited freedom) furthered the development of conceptual tools crucial for settling questions regarding the functioning of a free society—in concrete terms, the working of a perfectly free market economy. Without going deeply into the conceptual details, linear programming as a key tool of operations research set the stage for a formal market theory in which powerful tools developed by theoretical mathematicians—so-called fixed-point theorems—could be applied. Several young theorists, within a relatively short period after World War II, realized how the instruments made available by operations research and theoretical mathematics allowed a rigorous solution to the question of the existence of a general market equilibrium. The researchers who first mastered this problem were Kenneth Arrow, Gerard Debreu, and Lionel McKenzie. The book goes deeply into the question of scientific credit. In particular, the authors scrutinize the process from independent research to the collaboration of two of the key scientists to the writing, refereeing, and publication of research papers that influenced the priority of the separate research outputs. Here, Düppe and Weintraub find and develop their focal point. McKenzie, the author with priority of publication with his 1954 *Econometrica* article detailing a proof of existence, lived to see his two competitors, Arrow in 1972 and Debreu in 1983, receive Nobel prizes in economics. While Arrow's role and credit is not doubted in the book, Düppe's and Weintraub's assessment of Debreu is different. Debreu, the only pure mathematician among the three, emerges in the book as the least praiseworthy in several respects. He appears to have had no interest whatsoever in the practical economic

relevance of his work, he might have played a dubious role in the refereeing process of McKenzie's article, and he certainly did not credit others easily.

Here, then, the text confronts us with several interesting contradictions. The contributions of the three theorists are presented as exemplary of a rigorous mathematical analysis of economic problems. In fact, we read that the protagonists succeeded in raising the standards of what it means to be an economist today. But the scientist who pushed this process the farthest, undoubtedly Gerard Debreu, should not, according to the authors, have received any more credit than McKenzie. McKenzie, in turn, who wrote articles that were no less rigorous yet remained readable for nonmathematicians, is not praised for this very important quality. In a peculiar sense, then, the intellectual tensions between many mathematical economists and reality become apparent. Abstracting from many practically important elements of market functioning, or the sometimes forced translation into hypothetical institutional procedures (e.g., concerning the process of price setting or the role of uncertainty), leads to a mathematically tractable but also strongly idealized description of reality. This idealization has no role for large players, cartels, or winners-take-all. But these elements of reality both are important in the research of business historians and, as the book very ably documents, constitute key circumstances for the academically ambitious to consider when maneuvering their careers.

Tobias F. Rötheli is professor of macroeconomics at the University of Erfurt in Germany. His research is predominantly in the field of behavioral economics. In his historical work, he focuses on the coevolution of quantitative methods in academic economics and in business practice.

. . .

Walter Lippmann: Public Economist. *By Craufurd D. Goodwin*. Cambridge, Mass: Harvard University Press, 2014. x + 414 pp. References, index. Cloth, $35.00. ISBN: 978-0-674-36813-2.
doi:10.1017/S0007680515000434

Reviewed by Maury Klein

Anyone who doubts that Walter Lippmann was one of the most remarkable figures of the twentieth century need only peruse this illuminating study. Craufurd Goodwin has written not a biography but what an earlier, simpler age called intellectual history—in this case, an analysis of the significant role Lippmann played in educating the public about the changing economic facts of life during several turbulent decades.