

The Economics of Market Disequilibrium

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***ECONOMIC THEORY, ECONOMETRICS,
AND MATHEMATICAL ECONOMICS***

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Preface

The purpose of this book is to construct an economic theory of market disequilibrium that will enable us to describe the functioning of an economy when supply and demand do not match on some markets. The stimulating contributions of Clower (1965) and Leijonhufvud (1968) have made quite clear that such a theory is a necessary step toward the integration of microeconomics and macroeconomics in the Keynesian tradition. They showed indeed that Keynesian Economics, which was totally disconnected from standard microeconomic theory, either Marshallian or Walrasian, could be made consistent with a more general theory allowing individual markets to be in disequilibrium. This book should thus be of interest both to macroeconomists desiring some microeconomic foundations for model construction pertinent to the analysis of policy problems, and to microeconomists who feel the need for an extended microeconomic theory allowing them to deal with states of market disequilibrium and thus with such important problems as involuntary unemployment.

The book provides a self-contained and comprehensive treatment of the theory, dealing with both the microeconomic and the macroeconomic aspects. The microeconomic theory of market disequilibrium is built progressively, starting with the basic microeconomics of individual markets and agents and continuing with more sophisticated multimarket models that extend the traditional Walrasian framework to deal with market disequilibrium, quantity signals, noncompetitive price making, and expectations. In the macroeconomic part of the book some simple synthetic models of unemployment and inflation and the associated problems of

economic policy are studied in a framework as close as possible to that of standard macroeconomic theory.

The book draws together work that I have done over several years. My thinking on the subject started with my doctoral dissertation, under the patient and helpful guidance of my adviser Gérard Debreu. At that time I had many stimulating conversations with Bent Hansen. I am also grateful to the many people who made useful comments on my thesis and on my subsequent articles on the topic, among whom I would like to mention Michael Allingham, Robert Clower, Jacques Drèze, Jean-Michel Grandmont, Roger Guesnerie, Frank Hahn, Werner Hildenbrand, Peter Howitt, Serge-Christopher Kolm, Guy Laroque, Axel Leijonhufvud, Pierre Malgrange, Thomas Marschak, Takashi Negishi, Joseph Ostroy, and Yves Younès.

My greatest debt is to those who read the manuscript at its different stages and commented extensively on it: Richard Arnott, Michael Blad, Robert Boyer, Roy Gardner, and Reinhard John, whose suggestions led to innumerable improvements in the text. However, I remain solely responsible for the opinions expressed and for any errors made. Last but not least, Josselyne Bitan cheerfully and efficiently typed the successive drafts of the manuscript.

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Introduction

The Problem

For about 40 years now, economics has been split between two partial and conflicting representations of the functioning of market economies. The first, exemplified by general equilibrium models, is essentially concerned with the allocation of factors (assumed fully employed and thus “scarce”) and the determination of relative prices. The second, exemplified by macroeconomic models in the Keynesian tradition, deals chiefly with the degree of utilization of factors at an aggregated level (notably, employment) and with the determination of the price level. In spite of numerous attempts at reconciliation, it has become increasingly clear that these two representations correspond to two different classes of economic models with quite different structures.

The Economics of Market Equilibrium

Ever since Adam Smith, classical and then neoclassical economics have been dominated by what we shall call the *economics of market equilibrium* or, briefly, *equilibrium economics*. The main common characteristics of models in this category are as follows: (i) there is equilibrium of demand and supply on all markets considered, (ii) this equilibrium is achieved essentially by price adjustments, and (iii) agents react exclusively to price signals.

These characteristics cover a wide range of models, from the partial equilibrium methods of Marshall to general intertemporal equilibrium in

the Walras–Arrow–Debreu framework, including temporary equilibria as developed by Hicks.¹ Unfortunately, such phenomena as involuntary unemployment or, more generally, the underutilization of economic resources, which form the core of Keynesian macroeconomic theory, are by definition left out. It should therefore not come as a surprise that a significant body of literature has developed that implicitly or explicitly rejects some of the basic assumptions of equilibrium theory.

The Keynesian Puzzle

Even a quick examination of macroeconomic models in the Keynesian tradition shows us that they do indeed violate the main characteristics of equilibrium economics: (i) since the labor market shows some unemployment, at least one market is not in equilibrium, (ii) some adjustments are not brought about by price movements alone, e.g., the goods market is equilibrated through movements in the level of income, and, (iii) finally, agents do not react only to price signals, e.g., the Keynesian consumption function depends on the level of income.

These violations could be the unintended side effects of a particular formalization. But this is clearly not the case, as Keynes himself viewed them as essential elements in his attack against the then-dominant classical economics (Keynes 1937, p. 250):

As I have said above, the initial novelty lies in my maintaining that it is not the rate of interest, but the level of incomes which ensures equality between savings and investment.

Unfortunately, for a long time macroeconomic theory did not go beyond adding the level of income as an endogenous variable, allowing in this way for possible unemployment. Concentration on the “equilibrium” of the goods and money markets, exemplified by the famous IS–LM model, further obscured the disequilibrium nature of the model. One had to wait for Clower (1965) and Leijonhufvud (1968)² to reinterpret Keynesian economics as economics of market disequilibrium and thereby open the way for more general theories.

The Economics of Market Disequilibrium

The purpose of this book is to develop a theory of disequilibrium states having these main characteristics: (i) some markets may not be in equilib-

¹ Walras (1874), Marshall (1890), Hicks (1939). Arrow and Debreu (1954), Debreu (1959), and Arrow and Hahn (1971).

² See also Hansen (1951), Patinkin (1956), and Hicks (1965), who presented a number of ideas in the same vein.

rium, (ii) adjustments can be made by quantities as well as by prices, and (iii) agents react to quantity signals as well as to price signals.

It is quite clear from the characterization given above of traditional microeconomic models and Keynesian macroeconomic models that such a theory will be a useful step toward their integration. It will, moreover, result in some generalization of both: of microeconomics by allowing the treatment of market disequilibrium states at the same disaggregated level and the enlargement of the “space” of signals to include quantity signals, and of macroeconomics by enabling us to consider many markets (not only the labor market) in disequilibrium.

The theory will allow us to describe not only the usual “competitive” system out of general equilibrium but also systems with imperfect competition or wage and price rigidities, which have become increasingly important phenomena in contemporary capitalist economies. It may also give us some insights into the working of economies where prices are fixed by central authorities, as in some socialist countries.

The Two Meanings of Equilibrium

Before going on to more specific issues, it may be useful to clear up a confusion that might arise about the word *equilibrium*, since two common but different meanings of this word are currently used in economics. The first refers to market equilibrium, i.e., the equality of supply and demand on markets. It was used by Marshall, Walras, and most subsequent authors in the neoclassical tradition, and it is this meaning of the word which we used above in talking about equilibrium and disequilibrium economics. The second meaning is borrowed from the physical sciences and describes a “state of rest” of a system. More precisely, an equilibrium is defined by Machlup (1958) as “a constellation of selected interrelated variables, so adjusted to one another that no inherent tendency to change prevails in the model which they constitute.”

These two meanings have, unfortunately, often been confused, particularly in microeconomic theory, since in most models an equilibrium in the second sense would not have been considered attained unless demand and supply were equal on all markets considered. They must not be confused here, however, because we shall often encounter throughout the book, notably in Parts II and III, states that are equilibria according to the second meaning but where market disequilibrium in the first sense prevails. As these two meanings of *equilibrium* have a long tradition, we shall employ both, but in such a way that it will always be clear from the context which of the two meanings is used.

An Outline of the Book

This book is divided into three parts devoted, respectively, to the basic microeconomics of market disequilibrium, to the study of non-Walrasian equilibrium concepts, and to macroeconomic applications, notably the problems of unemployment and inflation. The exposition has deliberately been kept at a minimal level of technicality throughout. A number of additional elaborations are collected in 17 short appendices, either because their inclusion in the main text would have interrupted the continuity of the exposition or because they are more technical.

Part I deals with the microeconomics of market disequilibrium at the level of individual markets and agents. Chapter 1 briefly reviews Marshallian and Walrasian equilibrium theories and argues that they cannot be extended in a simple manner to cover situations of market disequilibrium. It then describes the institutional framework assumed in the subsequent analysis. Chapter 2 describes how exchange takes place on markets when supply and demand do not match, and how quantity signals are generated in the transaction process. Chapter 3 examines the formation of effective demands and supplies on a single market, generalizing the standard analysis to the case where quantity constraints are present. Chapter 4 does the same in a multimarket setting, with the integration of “spillover” effects. Finally, Chapter 5 studies the formation of prices.

Part II is devoted to the study of different non-Walrasian equilibrium concepts. These are, of course, equilibria in the second of the two senses discussed in the preceding section. Chapter 6 introduces the notation and institutional framework common to all these concepts. Chapter 7 studies fixprice equilibria. Chapter 8 analyzes explicitly the influence of expectations patterns—notably quantity expectations—on current equilibria. Chapter 9 introduces price flexibility by studying non-Walrasian equilibria where some prices are determined by the agents. Chapter 10 studies the efficiency properties of the various equilibria considered.

Part III presents some macroeconomic applications of the concepts studied in the first and second parts. Chapter 11 gives a synthetic account of alternative unemployment theories. Chapter 12 indicates the role of expectations in determining the nature of current unemployment. Both these chapters are treated in the framework of a short-period model with the wage and price levels given. Chapter 13 introduces price flexibility using the same basic model. The dynamic evolution of the corresponding equilibria is studied in Chapter 14 in order to construct a synthetic model of cost and demand inflation.

PART I

MICROECONOMICS

1

Market Equilibrium and Disequilibrium

1. The Market Equilibrium Paradigm

In market economies, most of the circulation and allocation of economic goods takes place through exchanges on markets. Moreover, most production decisions are directly or indirectly guided by these exchanges. It is thus a central task of economic theory to determine the level of prices and quantities exchanged. Traditionally economists have relied on models of *market equilibrium* to do this. The basic idea behind these models is that somehow (equilibrium) prices are sufficient market signals that correctly represent the scarcities of various economic goods. A typical model contains a set of demand and supply schedules that depend on price signals; the condition of equilibrium between supply and demand will determine the prices as well as the quantities exchanged on each market.

To be a little more precise, let us start, in the “partial equilibrium” tradition generally associated with the name of Marshall, by describing how a single market functions. In this tradition, goods are exchanged against money on separate markets. Let us consider one of them and let p be the monetary price on this market. There are demanders and suppliers, all indexed by $i = 1, \dots, n$, who express demands or supplies as functions of price p , denoted by $d_i(p)$ and $s_i(p)$. These demand and supply functions are “notional” in the terminology of Clower (1965); that is, they are constructed under the assumption that the agents can purchase and sell as much as they want at the proposed price—hence the absence of any quantity signal. From these individual functions we derive aggregate de-