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Preface

This book contains a revised version of my *Habilitationsschrift* which has been accepted by the economic department of Dortmund University in 1991. It consists mostly of unpublished material which has been presented during the last years at the universities of Cologne, Dortmund, Hagen, Mannheim, and Munich and at a meeting in Wiesbaden.

I am indebted to very many colleagues for fruitful discussions. In particular, I want to thank Friedrich Breyer, Johannes Hoffmann, Heinz Holländer, Wolfgang Leininger, Bruno Schönfelder, Gerhard Schwödi-auer, Hans-Werner Sinn, Klaus Spemann, and Jochen Weimann, but this list is surely incomplete. I am especially grateful, however, to Wolfram F. Richter and Niko Wolik who have continually accompanied the evolution of this work and to whom I owe many suggestions as well as corrections. The remaining errors, needless to say, are mine.

Cologne, September 1991

Stefan Homburg

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Chapter 1. Introduction

The present monograph deals with *Efficient Economic Growth*. This title has deliberately been chosen so as to distinguish the problem we want to analyze from the older concept of *Optimal Economic Growth*. Most contemporary writers, I think, do not believe in the existence of "an" optimal growth path if the term "optimal" is to bear any precise meaning. In a model of economic growth there generally exists a variety of *Pareto-optimal*, i.e. *efficient*, growth paths, but other paths may well be inefficient. And this is the main issue we want to investigate: How can efficient growth paths be characterized? And can we believe that growth in our actual market economies is efficient indeed?

These problems are not new, nor are the methods we use in order to analyze them. But the study tries to bring together two strands of growth theory. The first consists of rather primitive models of the one-sector type and concentrates heavily on *steady state growth*, which is both a special and an unrealistic assumption. The other strand, encompassing the microeconomic overlapping-generations literature, is much in the spirit of static general equilibrium theory à la Arrow-Debreu, yet at the same time sterile and certainly not in a position to answer the questions growth theorists habitually ask. In closing the gap between these two strands we gradually develop a unifying theory of economic growth which focuses on efficiency problems and reveals the common underlying structure of many issues encountered in this field. We also derive a plausible condition that ensures *dynamic efficiency* – the latter term being used as a short-hand for "Pareto-optimality in a dynamic model with an unbounded horizon".

The framework used throughout the text is a microeconomic overlapping-generations model with both consumption and production activities, with finitely lived agents, and without bequests. The reason for selecting precisely these assumptions is a strategic one: It is well-known that dynamic inefficiency does not occur in a model with infinitely lived agents and without bequests – the problem is specific to worlds where all agents have finite lifespans, such as the world we live in. And as Weil (1987) has shown, a bequest motive of the type proposed by Barro (1974), will *not*

preclude dynamic inefficiency. Just the other way round, inefficiency will render operative bequests *impossible*. Therefore, the introduction of a Barro-type bequest motive would make the analysis notationally more complicated without changing the basic results (though different results may emerge in a setting with bequests and strategic behaviour, where the generations play against one another).

On the other hand, it seemed worthwhile to include production and to admit arbitrarily many types of agents and commodities per period. For notational convenience only, we also imposed a specific structure on the model in assuming that all agents live for two periods. This is not restrictive because, as Balasko, Cass and Shell (1980) have demonstrated so nicely, every two-period lifetime model can be interpreted as a n -period lifetime model by simply redefining indices – provided that the number of agents living in every period is arbitrary. In this sense, and because no special behavioural assumptions are employed, our framework can be thought of as a quite general model of economic growth.

The text is virtually divided into two parts, the first encompassing chapters 2 to 5, and the second consisting of chapter 6 only. The analysis in the first part is general, abstract, and there we try to give definitive answers to the questions we ask. The second part is special, vivid, and full of examples, and it does not contain any result which goes beyond the theorems of the first part. Experts in the field will presumably consider the second part as a collection of teaching examples whilst newcomers may want to start reading with chapter 6 which motivates the preceding analysis.