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A Disequilibrium Model of Demand for Factors of Production

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A Disequilibrium Model of Demand for Factors of Production

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(Resolution adopted October 25, 1926 and revised February 6, 1933, February 24, 1941, April 20, 1968, and September 17, 1973)

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PREFACE

THE behavior of capital investment and employment patterns in time-series data has been an active area of research in economics for many years, undoubtedly because of the importance of these phenomena for understanding and controlling business cycles. Research in the area has intensified in the past decade, with the emergence of better data and the realization that investment and employment variations may be best understood in terms of a modification of the theory of the firm. The modification largely consists of explicit recognition that there are costs associated with changes in the stocks of inputs as well as with changes in the intensity of their use. Under these circumstances, rational decision-making requires taking into account the effect of current decisions on future events, for there are strong incentives to minimize costs of change through production smoothing, reducing the period-to-period variance of input stocks by spreading out such changes over an extended horizon. By providing a link between present and future, this approach introduces a dynamic element into the theory of the firm that the static constructs of short- and long-run cost functions lack. It focuses attention away from the question of which inputs are to be regarded as fixed or variable over the period spanned by the data, and toward the role of inventories of both output and inputs and of utilization rates, and the dynamic linkages between input changes during the adjustment process. We hope to have provided new evidence on these important and interesting relationships in this study.

A great deal of research under the auspices of the National Bureau has pointed toward the development of dynamic models of the variety illustrated in this monograph. In particular, mention must be made of

Wesley Mitchell's[1] view of the behavior of costs in the generation of business cycles and empirical work by Thor Hultgren[2] in documenting that behavior for the case of labor costs. Further work by Hultgren[3] and also by Solomon Fabricant[4] traced systematic patterns of productivity over the course of business cycles and raised questions difficult to resolve on the basis of the customary distinctions between the short run and the long run. Finally, Gerhard Bry's[5] investigation of variations in the length of the work week naturally lead toward input inventory and capacity considerations in the theory of demand for factors of production. Though sometimes only implicitly, elements of all these works are to be found in our model, and our research certainly could not have proceeded as it did without them.

Our collaboration began in 1967–68, when we both held research fellowships at the National Bureau and decided to pool our efforts. From the beginning, many persons contributed to the completion of this volume, and we are greatly indebted to all of them. Geoffrey Moore, then director of research, and Victor Fuchs, then in charge of the fellowship program, gave much encouragement to our initial plans. At a later stage John Meyer made a number of important suggestions regarding model design. George Borts, Solomon Fabricant, Robert Lucas, Marc Nerlove, Arthur Treadway, and Neil Wallace offered many useful suggestions and criticism of the work at various times. A staff reading committee consisting of Robert Eisner, Franklin Fisher, and Christopher Sims provided a volume of constructive criticism that materially improved the manuscript. Robert Lipsey was also very helpful in this connection. We are also thankful for the valuable comments of the Board of Directors' reading committee: Otto Eckstein, Nathaniel Goldfinger, and Robert M. Solow. Our thanks also are due to Emilio G. Collado for his observations on the manuscript.

This study benefited greatly from highly competent assistance. Most of

1. Wesley C. Mitchell, *Business Cycles: The Problem and Its Setting*, New York, NBER, 1927.
2. Thor Hultgren, *Changes in Labor Cost During Cycles in Production and Business*, Occasional Paper 74, New York, NBER, 1960.
3. Thor Hultgren, *Cost, Prices, and Profits: Their Cyclical Relations*, New York, NBER, 1965.
4. Solomon Fabricant, *Basic Facts on Productivity Change*, Occasional Paper 63, New York, NBER, 1959.
5. Gerhard Bry, *The Average Workweek as an Economic Indicator*, Occasional Paper 69, New York, NBER, 1959.

the data processing and computations were supervised admirably by Veena Bhatia, Morris Harf, and Susan Johnson. They were assisted at one time or another by Margaret Crump, Jennifer Michaels, and Selma Seligsohn. Rose Ferro provided very efficient and conscientious typing and secretarial assistance. We are very grateful to Ester Moskowitz for editing the manuscript. H. Irving Forman's expert draftsmanship contributed immeasurably to the presentation of the material in this book.

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