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# *Studies in Process Analysis*

ECONOMY-WIDE  
PRODUCTION CAPABILITIES

Edited by

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## FOREWORD

Traditionally one thinks of the "productive capacity" of an economy as one number that expresses, in some appropriate unit, the maximum output of which that economy is capable in some stated period. The concept of gross national product provides a scale to which such a number can be referred. In geometrical language, it defines a line on which a "capacity point" locates the upper boundary of the collection of feasible rates of output.

This one-dimensional concept of capacity becomes inadequate, however, as soon as the product composition of output becomes as important as the aggregate output. For instance, in a Leontief input-output model with three industries, the rates of output of these industries are representable in a three-dimensional space. If a fourth commodity, say labor, is the only scarce primary input in the model, the productionwise feasible points fill a tetrahedron with one vertex in the origin and the other three vertices located on each of the three positive coordinate axes respectively.

Such geometrical language helps the imagination. It must yield to more practicable numerical procedures when the number of products, and the number of resource limitations bearing in specific ways on the various production processes, increase. In the programmatic first chapter the editors of this volume set forth their concept of process analysis as the procedures for representing the set of productionwise feasible points, and for making it accessible for such exploration as may be desired. The data are technological, the methods mathematical, and the results are estimates of alternative feasible compositions of output that are of possible interest to the policy maker. In more traditional terminology, one may say that process analysis aims at giving numerical access to the production function for a productive establishment, a multiplant firm, an industry, or an entire economy, in as much commodity detail as is both practicable and desirable.

Developments in input-output analysis, in activity analysis and in linear programming were necessary to make it possible to contemplate such an objective. At the same time, being defined in terms of a task rather than techniques, process analysis is not limited to the techniques from which it has developed.

On behalf of the Cowles Foundation, I wish to thank the editors and the authors of this volume for their innovating contributions, and for their consent to the inclusion of this collective work in our monograph series. To the readers, I express the hope that it may be found useful in a practical way in the making of economic decisions.

TJALLING C. KOOPMANS

## CONTENTS

PART I. SCOPE AND METHOD OF PROCESS ANALYSIS	1
1. Introduction, <i>Alan S. Manne and Harry M. Markowitz</i>	3
2. Alternate Methods of Analysis, <i>Alan S. Manne and Harry M. Markowitz</i>	8
3. Problems and Potentials of Process Analysis, <i>Alan S. Manne and Harry M. Markowitz</i>	21
PART II. PETROLEUM AND CHEMICALS: PRODUCTION, TRANSPORTATION, AND PLANT LOCATION	29
Glossary of Technical Terms, <i>Alan S. Manne</i>	31
4. A Linear Programming Model of the U. S. Petroleum Refining Industry, <i>Alan S. Manne</i>	33
5. A Spatial Model of U. S. Petroleum Refining, <i>Thomas A. Marschak</i>	75
6. Chemical Processes, Plant Location, and Economies of Scale, <i>Thomas Victorisz and Alan S. Manne</i>	136
PART III. FOOD AND AGRICULTURE	159
7. Spatial Programming Models to Specify Surplus Grain Producing Areas, <i>Earl O. Heady and Alvin C. Egbert</i>	161
8. Spatial Price Equilibrium and Process Analysis in the Food and Agricultural Sector, <i>Karl A. Fox</i>	215
PART IV. METALS AND METALWORKING	235
9. Process Analysis of the U. S. Iron and Steel Industry, <i>Tibor Fabian</i>	237
10. The Metalworking Industries, <i>Harry M. Markowitz and Alan J. Rowe</i>	264
11. Metalworking Requirements Analysis, <i>Harry M. Markowitz and Alan J. Rowe</i>	285
12. A Machine Tool Substitution Analysis, <i>Harry M. Markowitz and Alan J. Rowe</i>	313

13. Future Metalworking Analysis, <i>Harry M. Markowitz and Alan J. Rowe</i>	352
14. Statistical Appendix on Metalworking, <i>Harry M. Markowitz and Alan J. Rowe</i>	357
15. Alternative Approaches to Metalworking Process Analysis, <i>Thomas Vietorisz</i>	364
PART V. PROGRAMMING OF ECONOMIC DEVELOPMENT	377
16. Key Sectors of the Mexican Economy, 1960-1970, <i>Alan S. Manne</i>	379
17. Sector Studies in Economic Development Planning by Means of Process Analysis Models, <i>Thomas Vietorisz</i>	401
APPENDIX. BASIC CONCEPTS OF ACTIVITY ANALYSIS, <i>Alan S. Manne</i>	417
INDEX	423