

Number 10 *Winter*

Lecture Notes in Economics and Mathematical Systems

Managing Editors: M. Beckmann and H. P. Künzi

Mathematical Economics

116

K. Miyazawa



Input-Output Analysis and the
Structure of Income Distribution



Springer-Verlag
Berlin · Heidelberg



INPUT-OUTPUT ANALYSIS AND THE STRUCTURE OF INCOME DISTRIBUTION

BY KENICHI MIYAZAWA

CONTENTS

FOREWORD

PART ONE: INPUT-OUTPUT AND INCOME FORMATION

CHAPTER 1	INTERINDUSTRY ANALYSIS AND THE STRUCTURE OF INCOME DISTRIBUTION	1
I.	Introduction	1
II.	Interindustry Analysis and the Process of Distribution and Expenditure of National Income	2
	1) The Leontief Multiplier, Keynesian Multiplier and Kalecki Multiplier	
	2) Generalization of the Input-Output Model	
	3) The Coefficients of Inter-Income-Groups	
III.	The Relationship of Inter-Income-Groups and the Multi-Sector Income Multiplier	8
	1) The Income Multiplier as a Matrix	
	2) Accepted Multipliers as Special Cases	
	3) Structure of the Propagation Process	
IV.	The Convergence Conditions of the Model	14
	1) The Properties of Leontief-type Matrices	
	2) Convergence Conditions in the Model	

CHAPTER 2	INPUT-OUTPUT ANALYSIS AND INTERRELATIONAL INCOME MULTIPLIER AS A MATRIX	22
I.	Introduction	22
II.	Formulation of a Regional Income Multiplier in the form of a Matrix ..	23
III.	The Interrelational Income Multiplier among Regions	26
IV.	Composition of Final Demand and the Regional Income-Distribution	29
V.	Output Determination and Interregional Income Generation	36

CHAPTER 3 FOREIGN TRADE MULTIPLIER, INPUT-OUTPUT ANALYSIS AND THE CONSUMPTION FUNCTION	43
I. Introduction	43
II. The Foreign Trade Multiplier and the Circular Flow of Intermediate Products	44
III. The Modified Multiplier and the Fundamental Equation for an Open Economy	46
IV. Interindustry Analysis and the Consumption Function	48
V. Empirical Estimates	51
VI. Formula for the Computation of the Subjoined Inverse showing the Effect of Endogenous Changes in Consumption	55
1) Derivation of the Computation Formula	
2) Propagation Process Combining Leontief's Multiplier and the Keynesian Multiplier	

PART TWO: INTERNAL AND EXTERNAL MULTIPLIERS

CHAPTER 4 INTERNAL AND EXTERNAL MATRIX MULTIPLIERS IN THE INPUT-OUTPUT MODEL	59
I. Introduction	59
II. Partitioned Matrix Multipliers	60
III. Interregional Repercussion Model	65
IV. Some Extensions of the Model	71
1) Extension in the Number of Partitioned Groups	
2) Inclusion of the Income Formation Process	
CHAPTER 5 AN ANALYSIS OF THE INTERDEPENDENCE BETWEEN SERVICE AND GOODS-PRODUCING SECTORS	76
I. Introduction	76
II. Income and Employment Analysis of Interdependency of Two Sectors	77
III. Input-Output Analysis of the Interdependency of Two Sectors	85
1) Intersectoral Propagation Pattern	

2) Cost-Push Effects of Service-Prices	
IV. International Comparison	93

PART THREE: DUAL ECONOMIC STRUCTURE

CHAPTER 6 THE DUAL STRUCTURE OF THE JAPANESE ECONOMY AND ITS GROWTH PATTERN

I. Introduction	100
II. Economic Growth and Differentials in Capital Intensity by Size of Firm	101
1) Schema of Capital Concentration and Growth of Enterprises	
2) Differentials in Wages and Capital Intensity	
3) Permanence of the Dual Structure	
III. Differentials in Composition of Funds and Interest Rates	111
1) Funds of Enterprises and Capital Accessibility	
2) Differentials in Interest Rates on Borrowed Funds and Cost of Funds	
3) Differentials in Interest Rates and Unequal Distribution of Loans	
IV. Structural Peculiarities of Capital Concentration	120
1) Factor Proportion and Differentials in Wages and Interest Rates	
2) Structural Peculiarities of Capital Concentration in Japan	
V. Conclusion	126
REFERENCES	129
INDEX	133