

Lecture Notes in Economics and Mathematical Systems

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

Mathematical Economics

99

Production Theory

Proceedings of an International Seminar
Held at the University of Karlsruhe
May–July 1973

FB Mathematik TUD



58197637

Edited by W. Eichhorn, R. Henn, O. Opitz, and R. W. Shephard



Fachbereich Mathematik
Technische Hochschule Darmstadt

Inv.-Nr. B 14174

Springer-Verlag
Berlin · Heidelberg · New York 1974

TABLE OF CONTENTS

List of Contributors	VII
--------------------------------	-----

Part 1

Scalar-Valued Production Functions:

Homotheticity, Quasilinearity, and Technical Progress

BECKMANN, M.J.: Invariant Relationships for Homothetic Production Functions	3
EICHHORN, W.: Characterization of the CES Production Functions by Quasilinearity	21
EICHHORN, W., and S.-C.KOLM: Technical Progress, Neutral Inventions, and Cobb-Douglas	35
FÄRE, R.: A Characterization of Hicks Neutral Technical Progress	47
FÄRE, R.: On Linear Expansion Paths and Homothetic Production Functions	53
STEHLING, F.: Neutral Inventions and CES Production Functions	65

Part 2

Linear Multisectoral Production Models

AFRIAT, S.N.: Production Duality and the von Neumann Theory of Growth and Interest	97
HELLWIG, K., and O.MOESCHLIN: A Note on a Production Problem in a Multisectoral Economic Model	101
KOGELSCHATZ,H.: A Dynamic Input-Output Model with Variable Production Structure	109
KRELLE, W.: Disaggregated Production Functions	121

Part 3

Nonlinear Multisectoral Production Models

STEHLING, F.: Balanced Growth of Open Economies under Variable Degree of Homogeneity	147
VAHRENKAMP, R.: On Weak Homogeneity	177

Part 4

Production Correspondences

BOL, G.: Continuity of Production Correspondences and a Relation between Efficient Input and Output Vectors. . . .	207
HENN, R., and E. KRUG: On Efficient Points of a Stochastic Production Correspondence	221
RUYS, P.H.M.: Production Correspondences and Convex Algebra	231
SHEPHARD, R.W.: Semi-Homogeneous Production Functions and Scaling of Production	253
SHEPHARD, R.W., and R. FÄRE: The Law of Diminishing Returns	287

Part 5

Topics Related to Production Theory

EGLE, K.: A Category of Production Decision Models	321
MARSCHAK, J.: Value and Cost of Information Systems	335
OPITZ, O.: On The Problem of Product Life Cycle	359
Author Index	375
Subject Index	379