

Contents:

0. Introduction	1
1. Time in the Economic Equations of Prices and Production	9
1.1. Production Equations	9
1.2. Price Equations	22
2. The System of Economic Quantity and Price Equations	28
2.1. Quantity Equations	28
2.1.1. Production without Durable Equipment	28
2.1.1.1. Production Equations	28
2.1.1.2. Observation Equations	35
2.1.1.3. Balanced Growth I: Accumulation of Intermediate Products	38
2.1.2. Production with Durable Capital Goods	40
2.1.2.1. Production Equations	40
2.1.2.2. Balanced Growth II: Accumulation of Durable Capital Goods	50
2.1.2.3. Observation Equations	54
2.1.3. Joint Production	56
2.1.3.1. Production Equations	56
2.1.3.2. Observation Equations	58
2.1.3.3. Balanced Growth III: Expansion of Process Intensities in von Neumann's Generalized Model	59
2.1.4. Summary Remarks on Quantity Equations	60
2.2. Price Equations	63
2.2.1. Price Formation without Durable Capital Goods	63
2.2.1.1. Price Equations	63
2.2.1.2. Observation Equations	67
2.2.1.3. Uniform Rate of Profit I: Accumulation of Circulating Capital	68

2.2.2.	Price Formation with Durable Capital Goods	74
2.2.2.1.	Price Equations	74
2.2.2.2.	Observation Equations	78
2.2.2.3.	Uniform Rate of Profit II: Accumulation of Fixed Capital	79
2.2.3.	Price Formation with Joint Production	84
2.2.3.1.	Price Equations	84
2.2.3.2.	Observation Equations	85
2.2.3.3.	Uniform Rate of Profit III: Accumulation of Capital in von Neumann's Generalized Model	86
2.2.4.	Summary Remarks on Price Equations	87
2.3.	Some Amplifications of the System	89
2.3.1.	From Discrete Time to Continuous Time	89
2.3.2.	A Linear Stock-Flow System	94
2.3.3.	The Problem of Control I: Leaving the Steady State	95
3.	Prices and Production in Economic Theory	100
3.0.	Introduction	100
3.1.	Simultaneous-Equations Systems	102
3.1.1.	The Leontief System	102
3.1.2.	The System of Walras	110
3.1.2.1.	Production and Prices without Durable Capital Goods	111
3.1.2.1.1.	Production Equations	111
3.1.2.1.2.	Price Equations	114
3.1.2.1.3.	Walras' Law	116
3.1.2.2.	Production and Prices with Durable Capital Goods	117
3.1.2.2.1.	Production Equations	117
3.1.2.2.2.	Price Equations	118
3.1.3.	The Cobb-Douglas Production Function	120
3.1.4.	Summary Remarks on Simultaneous Models	125

3.2. Difference Equation Systems	127
3.2.1. The von Neumann Model	127
3.2.2. The System of Sraffa	129
3.2.2.1. Price Equations	129
3.2.2.2. Durable Capital Goods	131
3.2.3. The Reproduction Scheme of Marx	135
3.2.3.1. Marx's Original Equations	135
3.2.3.2. Input–Output Interpretation	139
3.2.3.3. Technical Progress and the Rate of Profit	141
3.2.4. Summary Remarks on Difference–Equation Models	143
3.3. Conclusion (The Problem of Control II): The Generalized Transformation Problem of Value Theory	144
3.3.1. Introduction	144
3.3.2. The Transformation Problem in General	145
3.3.3. The Marxian Transformation Problem	149
3.3.4. The Walrasian Transformation Problem	150
Bibliography	153