

Contents

Preface — V

Introduction — 1

Chapter I

Elements of Probability Theory — 4

- 1.1 Random Variable — 4
- 1.2 Function of Random Variables — 10
 - 1.2.1 Function of One Argument — 11
 - 1.2.2 Function of Multiple Arguments — 13
- 1.3 Random Process — 19
- 1.4 Linear Time Series — 21

Chapter II

Adaptation of Probabilistic Models — 26

- 2.1 Processing of Experimental Data — 26
- 2.2 Criterion of Maximum Likelihood — 29
- 2.3 Properties of Maximum Likelihood Estimates — 30
- 2.4 Least-Squares Method — 35
- 2.5 Statistical Inferences — 36

Chapter III

Stochastic Oscillatory Processes — 39

- 3.1 Random Oscillations — 39
- 3.2 Yule Series — 43
- 3.3 Discrete Coincidence of Yule Series and Random Oscillations — 47
- 3.4 Estimation of Yule Model Factors — 51
 - 3.4.1 Estimates of Maximum Likelihood — 51
 - 3.4.2 Least-Squares Estimation — 54

Chapter IV

Modelling of Economic Cycles — 58

- 4.1 Probabilistic Description of Investment Function — 58
- 4.2 Stochastic Models of Economic Cycles — 60
- 4.3 Prospects of Applying Cycle Models — 65

Chapter V

Features of Estimation Procedure — 68

- 5.1 Recovery of the Income Function from *GDP* Estimates — 68
 - 5.1.1 Ill-Posed Recovery Task — 69

VIII — Contents

5.1.2	Discrete Implementation of the Recovery Procedure —	74
5.2	Decomposition of the Income Function —	77
5.3	Pseudo-Stationarity of Economic Cycles —	79
5.4	Accuracy of Estimates —	81
5.4.1	Statistical Errors —	82
5.4.2	Bias of Estimates —	88

Summary — 92

References — 95

Index — 97