TABLE OF CONTENTS

Chapter I -- Introduction 1

1.1 Purpose and Outline of the Study 1
1.2 Review of the Literature on Regression Models with Random and Fixed Coefficients 2
1.3 Conclusions 23

Chapter II -- Efficient Methods of Estimating a Regression Equation with Equicorrelated Disturbances 24

2.1 Introduction 24
2.2 Some Useful Lemmas 25
2.3 A Regression Model with Equicorrelated Disturbances 26
2.4 Analysis of Time Series of Cross-Sections 32
2.5 Estimation When the Variance-Covariance Matrix of Disturbances is Singular 54
2.6 Estimation When the Remaining Effects are Heteroskedastic 54
2.7 Conclusions 59

Appendix 60

Chapter III -- Efficient Methods of Estimating the Error Components Regression Models 63

3.1 Introduction 63
3.2 Some Matrix Results 63
3.3 Covariance Estimators 64
3.4 Estimation of Error Components Models 66
3.5 A Class of Asymptotically Efficient Estimators 72
3.6 Small Sample Properties of the Pooled Estimator 75
3.7 A Comparison of the Efficiencies of Pooled and OLS Estimators 77
3.8 A Comparison of the Efficiency of Pooled Estimator with Those of its Components 80
3.9 Alternative Estimators of Slope Coefficients and the Regression on Lagged Values of the Dependent Variables 82
3.10 Analysis of an Error Components Model Under Alternative Assumptions 84
3.11 Maximum Likelihood Method of Estimating Error Components Model 85
3.12 Departures from the Basic Assumptions Underlying the Error Components Model 88
3.13 Conclusions 93

Appendix 95

Page

Chapter IV -- Statistical Inference in Random Coefficient Regression Models Using Panel Data 97

4.1 Introduction 97
4.2 Setting the Problem 97
4.3 Efficient Methods of Estimating the Parameters of RCR Models 99
4.4 Estimation of Parameters in RCR Models when Disturbances are Serially Correlated 127
4.5 Problems Associated with the Estimation of RCR Models Using Aggregate Data 131
4.6 Forecasting with RCR Models 133
4.7 Relaxation of Assumptions Underlying RCR Models 138
4.8 Similarities Between RCR and Bayesian Assumptions 140
4.9 Empirical CES Production Function Free of Management Bias 142
4.10 Analysis of Mixed Models 143
4.11 Conclusions 155

Chapter V -- A Random Coefficient Investment Model 156

5.1 Introduction 156
5.2 Grunfeld's Hypothesis of Micro Investment Behavior 156
5.3 Estimation and Testing of Random Coefficient Investment Model 159
5.4 Aggregate Investment Function 170
5.5 Comparison of Random Coefficient Model with Fixed Coefficient Macro Model 171
5.6 Comparison of Random Coefficient Model with Fixed Coefficient Micro Model 172
5.7 Conclusions 175

Chapter VI -- Aggregate Consumption Function with Coefficients Random Across Countries 176

6.1 Introduction 176
6.2 Aggregate Consumption Model 177
6.3 Source and Nature of Data 178
6.4 Fixed Coefficient Approach 178
6.5 Random Coefficient Approach 182
6.6 Conclusions 190

Chapter VII -- Miscellaneous Topics 191

7.1 Introduction 191
7.2 Identification 191
7.3 Incorporation of Prior Information in the Estimation of RCR Models 194
7.4 Conclusions 200

Appendix 201

Bibliography 204