Contents

Preface xi
List of Figures xiii
List of Tables xiv
List of Abbreviations xvii

1. Introduction 1
   - 1.1 Scope and Limitations 1
   - 1.2 Theories of Size Distribution of Income: A Brief Review 3
   - 1.3 Lorenz Curve and Its Variants 4
   - 1.4 Social Welfare Ranking of Income Distribution 5
   - 1.5 Measures of Income Inequality 6
   - 1.6 Identification of the Poor 8
   - 1.7 Aggregate Poverty Measures 9
   - 1.8 Multidimensional Poverty 10
   - 1.9 Relationships among the Distributions of Economic Variables 11
   - 1.10 Application of Concentration Curves to Economic Analysis 12
   - 1.11 Tax Progressivity and Redistributive Effect of Taxation 15
   - 1.12 Normative Measures of Tax Progressivity and Redistributive Effects 17
   - 1.13 Negative Income Tax Plans 18
   - 1.14 Social Welfare Programs 19
   - 1.15 Social Price Indices and Inequality 20
   - 1.16 Impact of Prices on Poverty 22
   - 1.17 Economic Growth and Poverty 23
   - 1.18 Pro-Poor Growth and Poverty Reduction 24
   - 1.19 Summarizing the Main Contributions of the Book 26

2. Income Distributions 27
   - 2.1 Introduction 27
   - 2.2 Basic Concepts of Income Distribution Functions 27
   - 2.3 Normal Distribution 29
   - 2.4 The Pareto Law 30
   - 2.5 Generation of Income Distribution: Champernowne's Model 33
   - 2.6 The Pareto–Levy Law 36
   - 2.7 Family of Distribution Functions Satisfying the Weak Pareto Law 37
   - 2.8 Champernowne's Distribution 39
   - 2.9 Laws of Income Distribution Violating the Weak Pareto Law 40
   - 2.10 Concluding Remarks 43

3. The Lorenz Curve and Its Variants 44
   - 3.1 Introduction 44
   - 3.2 Definition of the Lorenz Curve 45
   - 3.3 Lorenz Curve for Well-Known Distribution Functions 48
   - 3.4 Direct Approaches to Specifying the Lorenz Curve 52

3.5 Some Useful Lemmas 54
3.6 Symmetric Lorenz Curve 55
3.7 Economic Development and Skewness of the Lorenz Curve 59
3.8 Intercountry Comparison of Skewness of Lorenz Curve 61
3.9 Relative and Absolute Inequality 64
3.10 Variants of the Lorenz Curve 66
3.11 Comparison of Inequality: China versus India 71
3.12 Concluding Remarks 73

4. Welfare Ranking of Income Distributions 76
4.1 Introduction 76
4.2 Some Useful Definitions 77
4.3 Individual Welfare 79
4.4 Social Welfare Function 80
4.5 Utilitarian Social Welfare Function 81
4.6 Atkinson's Theorem 82
4.7 Generalized Lorenz Curve 84
4.8 Welfare Ranking and Utilitarian Social Welfare Function 85
4.9 Some Implications of the Theorems 88
4.10 Abba Lerner's Probabilistic Social Welfare Functions 89
4.11 A Further Generalization of the Theorems 90
4.12 Stochastic Dominance 92
4.13 An Illustration Using Lao PDR Data 93
4.14 Concluding Remarks 95

5. Measurement of Income Inequality 97
5.1 Introduction 97
5.2 Axioms of Inequality Comparison 99
5.3 Gini Index and Relative Mean Difference 104
5.4 Information Measures of Inequality 106
5.5 Discomposability and Subgroup Consistency 108
5.6 Normative Measures of Inequality 109
5.7 Atkinson's Inequality Measures 111
5.8 General Social Welfare Framework for Income Inequality 113
5.9 Social Welfare Implications of the Gini Index 114
5.10 Is the Gini Index Decomposable and Subgroup Consistent? 118
5.11 Generalized Gini Index 122
5.12 Trends in Inequality in China 125
5.13 Polarization 127
5.14 Size and Share of the Middle Class in China 134
5.15 Concluding Remarks 135

6. Specifying Poverty Lines 138
6.1 Introduction 138
6.2 Absolute versus Relative Poverty Lines 139
6.3 A New Model of Specifying Absolute Poverty Thresholds 141
6.4 Food Poverty Line 144
6.5 Non-Food Poverty Line 146
6.6 Economies of Scale in Non-food Expenditure 147
6.7 Updating the Poverty Line 149

6.8 Development of Poverty Lines for Pakistan: A Case Study 150
6.9 International Poverty Line 158
6.10 Concluding Remarks 162

7. Poverty Measures 166
7.1 Introduction 166
7.2 Head-Count Ratio: A Popular Measure of Poverty 167
7.3 Poverty Gap Ratio 168
7.4 A Social Welfare Framework of Poverty Measures 171
7.5 Sen's Relative Poverty Measure 172
7.6 Sen's Absolute Measure of Poverty 174
7.7 Variants of Sen's Poverty Measures 175
7.8 Troublesome Axiom of Income Transfers 179
7.9 Monotonicity and Transfer-Sensitivity Axioms 181
7.10 A General Class of Poverty Measures 183
7.11 Particular Cases of the General Class of Poverty Measures 184
7.12 Utilitarian Social Welfare Functions 187
7.13 Particular Cases of the General Utilitarian Poverty Measures 189
7.14 Total Social Cost of Poverty (TSCP) for Utilitarian Social Welfare Functions 191
7.15 Decomposable Poverty Indices and Subgroup Consistency 193
7.16 Decomposability of Sen's Generalized Poverty Measures 195
7.17 Application to China, 1988–2018 196
7.18 Concluding Remarks 199

8. Multidimensional Poverty 202
8.1 Introduction 202
8.2 Unresolved Issues 203
8.3 Global Multidimensional Poverty Index 207
8.4 An Alternative Approach to Multidimensional Poverty 211
8.5 Union or Interaction Approaches to Identifying the Poor 212
8.6 A New Method of Measuring Multidimensional Poverty 213
8.7 Multidimensional Poverty in Brazilian Municipalities: A Case Study 218
8.8 Concluding Remarks 222

9. Concentration Curves 225
9.1 Introduction 225
9.2 Derivation of Concentration Curves 225
9.3 The Concentration Curve for Well-Known Income Distributions 227
9.4 Relationships between Elasticity and Concentration Curves 229
9.5 Concentration Index of a Function 234
9.6 Relative Concentration Curve and Index 238
9.7 Generalization of Social Welfare Functions 239
9.8 Aggregate Elasticity 240
9.9 Concluding Remarks 243

10. Applications of Concentration Curves to Economic Analysis 244
10.1 Introduction 244

10.2 The Engel Curve 244
10.3 Consumption and Saving Functions 247
10.4 The Stiglitz Model of Distribution of Income and Wealth among Individuals 249
10.5 Employment-Growth Elasticity 253
10.6 Application of Employment-Growth Elasticity to Brazil 257
10.7 Income Inequality by Factor Components 259
10.8 A Dynamic Decomposition of Inequality 262
10.9 Inequity in Opportunity 263
10.10 Opportunities in Education and Health in Indonesia 265
10.11 Concluding Remarks 267

11. Tax Progressivity and Redistribution Effect of Taxes 271
11.1 Introduction 271
11.2 Equity Axioms 273
11.3 Linkage between Tax Elasticity and Equity Axioms 274
11.4 Four Alternative Definitions of Tax Progressivity 275
11.5 Relative and Absolute Measures of Tax Progressivity 276
11.6 The Kakwani Index of Tax Progressivity and Its Variants 277
11.7 A Tax Progressivity Decomposition 279
11.8 The Suits Tax Progressivity Measure 282
11.9 Horizontal and Vertical Equity 283
11.10 A Hypothetical Example 287
11.11 Violation of Equity Axioms 288
11.12 An International Comparison of Inequities in Taxation 290
11.13 Income Tax Discrimination 291
11.14 Is There Discrimination in Australian Income Tax? 295
11.15 Relief Package in Response to COVID-19 Pandemic 296
11.16 An Illustration of Welfare Loss Due to Discrimination Using Brazilian Data 298
11.17 Concluding Remarks 300

12. Normative Measures of Tax Progressivity 302
12.1 Introduction 302
12.2 Relative and Absolute Measures of Tax Progressivity 303
12.3 Additive Separable and Rank Order Social Welfare Functions 304
12.4 Horizontal Inequity and Rank Change 306
12.5 Social Welfare Framework for Measuring Tax Progressivity 310
12.6 Redistributive Effect of Taxation 312
12.7 A General Class of the Gini Social Welfare Functions 314
12.8 A Class of Atkinson and Kolm Social Welfare Functions 317
12.9 Welfare Interpretation of Suits' Measure of Tax Progressivity 320
12.10 A New Progressivity Index Based on the Bonferroni Social Welfare Function 322
12.11 International Comparison of Tax Progressivity 324
12.12 Concluding Remarks 335

13. Negative Income Tax Plans 337
13.1 Introduction 337
13.2 A General Framework of Income Tax Plans 338

13.3 Alternative Negative Income Tax Plans 340
13.4 Progressivity of Negative Income Tax Plans 342
13.5 Redistributive Impacts of Negative Income Tax 345
13.6 A Numerical Illustration Using US data 348
13.7 Concluding Remarks 353

14. Targeting Tools to Evaluate Social Programs 355
14.1 Introduction 355
14.2 Targeting Indicators 356
14.3 Poverty Status and Selection of Beneficiaries 356
14.4 Beneficiary Incidence 359
14.5 Benefit Incidence 360
14.6 Universal Basic Income (UBI) 361
14.7 Perfect Targeting 361
14.8 The Social Rate of Return (SRR) 362
14.9 Operationalizing Social Rate of Return 366
14.10 China's Dibao Program 372
14.11 Evaluation Methodology 373
14.12 Evaluation of the Dibao, 2013 375
14.13 Impact of the Dibao on Poverty Reduction 378
14.14 Social Rate of Return for the Dibao 380
14.15 Concluding Remarks 382

15. Social Price Indices and Inequality 384
15.1 Introduction 384
15.2 Individual Price Indices 385
15.3 Social Price Indices 387
15.4 Social Expenditure Function 390
15.5 Class of Atkinson's Social Expenditure Functions 392
15.6 Class of Interdependent Social Expenditure Functions 394
15.7 Impact of Price Change on Inequality 396
15.8 Social Price Indices: A Case Study of Thailand 397
15.9 A Comparison with South Korea 401
15.10 Concluding Remarks 403

16. Poverty Price Indices 405
16.1 Introduction 405
16.2 Price Elasticity of Individual Money Metric Utility 406
16.3 Price Elasticity of Poverty 407
16.4 Measuring the Impact of Prices on Poverty 410
16.5 Price Index for the Poor 412
16.6 A Case Study for Brazil 413
16.7 Concluding Remarks 418

17. Economic Growth and Poverty 420
17.1 Introduction 420
17.2 Three Alternative Measures of Economic Growth 421
17.3 Growth Elasticity of Poverty: Cross-Country Regressions 425
17.4 Linkage between Poverty, Economic Growth, and Income Inequality: A Non-Parametric Approach 427

17.5 Growth Elasticity of Poverty Measures 429
17.6 Inequality Elasticity of Poverty 433
17.7 Trade-off between Economic Growth and Income Inequality 435
17.8 Sectoral Growth and Poverty 436
17.9 Kakwani's Poverty Decomposition 438
17.10 A Case Study of China 442
17.11 Concluding Remarks 447

18. Pro-Poor Growth 450
18.1 Introduction 450
18.2 What Is Pro-Poor Growth? 451
18.3 Stochastic Dominance and Pro-Poor Growth 453
18.4 Relative Poverty Growth Curve for Thailand, 1988–2000 457
18.5 An International Comparison of Pro-Poor Growth 458
18.6 Conceptual Framework for Full Approach 459
18.7 Poverty Equivalent Growth Rate (PEGR) 464
18.8 Properties of the PEGR 467
18.9 Operationalizing Pro-Poor Growth Rate 469
18.10 Four Asian Case Studies 471
18.11 Concluding Remarks 477

References 480
Name Index 492
Subject Index 495