

# Contents

<i>Preface</i>	xv
<b>1 Introduction</b>	<b>1</b>
1.1 Positive versus normative economics	3
1.2 Some controversies in welfare economics	5
1.3 Compensation in welfare economics	8
1.4 Compensating and equivalent variations	9
1.5 Efficiency and equity	10
1.6 Welfare weightings	11
1.7 Overview of the book	12
<b>2 Pareto optimality and the Pareto criterion</b>	<b>14</b>
2.1 Pareto optimality and the Pareto criterion defined	15
2.2 The pure consumption case	16
2.3 Production efficiency	18
2.4 The product-mix case	21
2.5 Pareto optimality and competitive equilibrium	23
The first optimality theorem	24
The second optimality theorem	28
2.6 Limitations of Pareto optimality and the Pareto principle	29
2.7 Conclusions	31
<b>3 The compensation principle and the welfare function</b>	<b>32</b>
3.1 The compensation principle	32
The pure consumption case	33
Distribution of different bundles	34
The reversal paradox	35
Intransitive rankings	37
3.2 Utility possibility curves and the potential welfare criterion	38
3.3 The social welfare function	40
3.4 Limitations of the social welfare function approach	41
3.5 Potential versus actual gains	45
3.6 Practical applied policy analysis: the relationship of general equilibrium and partial equilibrium analysis	45
3.7 Summary	48
<b>4 Welfare measurement for the producer</b>	<b>49</b>
4.1 The profit-maximizing firm	49
4.2 Welfare measures for the producing firm	52



	Profit	52
	Producer surplus and quasirent	54
4.3	The relationship of profit, quasirent and producer surplus	56
4.4	Producer welfare measurement in the input market	58
	The single-variable-input case	59
	The case of multiple inputs	62
4.5	Evaluation of nonprice benefits	66
4.6	Input quantity restrictions for the competitive firm	67
4.7	Investment and intertemporal welfare measurement	70
4.8	Summary	73
<b>Appendix to Chapter 4: Alternative measures of producer welfare in factor and product markets</b>		<b>75</b>
4.A	Sequential evaluation of a multiple price change	76
4.B	Evaluation of a multiple price change in the output market	78
4.C	Evaluation of a multiple price change in a single-input market	79
4.D	An example	80
4.E	Integrability and unique measurement in practice	82
4.F	A simple intertemporal model of producer investment	85
4.G	Alternative behavioral criteria and robustness of surplus measures	93
<b>5</b>	<b>Consumer surplus and consumer welfare</b>	<b>98</b>
5.1	The notion of consumer surplus	99
5.2	Path dependence of consumer surplus	102
5.3	Uniqueness of consumer surplus	105
5.4	Constancy of the marginal utility of income	109
5.5	Conclusions	112
<b>Appendix to Chapter 5: Nonuniqueness of consumer surplus</b>		<b>113</b>
5.A	The pure consumer case	113
5.B	Path dependence of consumer surplus	117
5.C	Money measures of utility change and constancy of the marginal utility of income	119
<b>6</b>	<b>Willingness to pay and consumer welfare</b>	<b>123</b>
6.1	Willingness-to-pay measures	123
6.2	The nibble paradox	130
6.3	Equality of compensating and equivalent variation	131
6.4	Graphical analysis of willingness to pay	132
6.5	Consumer surplus as a WTP measure: the single-price-change case	136
6.6	Consumer surplus as a WTP measure: the multiple-price-change case	141
6.7	Consumer surplus as a WTP measure: the price-income-change case	151
6.8	Exact measurement of WTP	153
6.9	Conclusions	155



<b>Appendix to Chapter 6: Welfare measurement for consumers</b>	<b>157</b>
6.A WTP measures for consumers	158
6.B Practical aspects of WTP measures	161
The single-price-change case	161
The multiple-price-change case	166
Computation of tighter error bounds	168
Conclusions for the pure consumer case	170
6.C The choice of measure and the money metric	170
6.D Accurate measurement with ordinary demands	172
6.E Practical approximation versus accurate measurement	175
6.F Exact measurement with integrability	177
<b>7 Factor supply and factor owner welfare</b>	<b>183</b>
7.1 Initial considerations in factor owner welfare measurement	183
7.2 Endogenous versus exogenous income	185
7.3 Path dependence and related issues	186
7.4 Willingness to pay revisited	189
7.5 Surplus change as an approximation of WTP	191
7.6 The general price change case for the factor owner	195
7.7 Multiple price changes with changes in exogenous income	200
7.8 An example	200
7.9 Imposed quantity changes	203
7.10 Areas between supply (or demand) curves as welfare measures for multiple changes	208
Welfare analysis with essential goods: evaluating multiple price changes in a single market	209
Weak complementarity: welfare analysis for nonessential goods	212
7.11 Exact measurement of WTP for factor owners	214
7.12 Summary and conclusions	214
<b>Appendix to Chapter 7: Welfare measurement for factor owners</b>	<b>216</b>
7.A The case with consumption and labor supply	216
7.B Money measures of utility change for labor suppliers	219
7.C WTP measures for consumer-laborers	221
7.D Separability of consumption and factor supply	223
7.E Approximate measurement of WTP for consumer-laborers	225
7.F The general factor supply problem	227
7.G Benefit measurement with household production	232
7.H Exact measurement and integrability for factor owners	238
7.I Indirect benefit measurement for price and nonprice changes	242
7.J Approximate WTP measures with quantity restrictions	246
<b>8 Aggregation and economic welfare analysis of market-oriented policies</b>	<b>253</b>
8.1 Aggregation of WTP: the producer case	253
8.2 Aggregation of WTP: the case of consumers and factor owners	256
8.3 Aggregation of money measures of utility change	257



8.4	Aggregation of WTP over producers and consumers	259
8.5	Welfare analysis of simple market distortions	262
	Price ceilings	262
	Price floors	263
	Price supports	264
	Taxes	264
	Subsidies	266
	Quotas and market rationing	266
	An example	267
8.6	Laissez-faire and government intervention	269
8.7	International trade	269
	The gains from trade	269
	The distribution of gains and losses across trading partners	272
	Trade and government programs	275
	Tariffs, quotas and export subsidies	277
	Voluntary export restraints	282
8.8	Empirical considerations in market-level welfare analysis	284
8.9	The choice of market for estimation	291
8.10	Conclusions	292
<b>Appendix to Chapter 8: Measurement of aggregate market welfare</b>		<b>294</b>
8.A	Aggregation of WTP for consumer demand and factor supply	294
8.B	Aggregation under heterogeneity for producers	298
	Integrability under aggregation	300
	Modeling producer heterogeneity	301
8.C	Aggregation under heterogeneity for consumers and factor owners	306
	Modeling consumer and factor owner heterogeneity	307
	Exact aggregation	308
<b>9</b>	<b>Multimarket analysis and general equilibrium considerations</b>	<b>311</b>
9.1	Welfare effects in vertically related markets	312
	Producer surplus associated with equilibrium supply	312
	Intermediate-market consumer surplus with equilibrium demand	316
	Vertical-sector welfare analysis	318
	Extension to factor supply and final consumer demand	319
9.2	Welfare effects in horizontally related markets	322
	Input-market relationships for industries	322
	Output-market relationships for industries	324
	Horizontal relationships for consumers and factor owners	326
9.3	General equilibrium welfare measurement	327
9.4	Welfare measurement with existing distortions in other markets	331
9.5	General equilibrium considerations in specification, estimation and interpretation	336
	The general vertical market approach	342
	The general equilibrium approach	343



Practical aspects of multimarket equilibrium welfare analysis	346
9.6 Conclusions	349
<b>Appendix to Chapter 9: Welfare measures for multimarket equilibrium</b>	<b>351</b>
9.A The case of a small vertically structured sector	352
Consumer surplus in an intermediate market	353
Producer surplus in an intermediate market	355
9.B General equilibrium welfare measurement	355
The equilibrium welfare effects of introducing a single distortion	359
Equilibrium effects of a distortion in an otherwise distorted economy	361
The case of an open economy	365
Segmenting an economy for purposes of practical economic welfare analysis	366
9.C The Boadway paradox	368
9.D Empirical considerations	372
<b>10 The welfare economics of market structure with applications to international trade</b>	<b>375</b>
10.1 The simple monopoly model	376
10.2 The simple monopsony model	378
10.3 The cases of oligopoly and oligopsony	379
10.4 Demand and cost conditions	381
10.5 Economies of scale	382
10.6 Market intermediaries	383
Producer marketing boards and associations	384
Consumerism	385
The pure middleman	386
An example	386
10.7 Labor unions	389
A simple model	389
Two markets	389
The effective union	391
10.8 Antitrust economics	391
10.9 International trade considerations	395
Optimal tariffs and export taxes	395
Supply management	398
Import-export cartels	401
10.10 Bargaining, game theory and welfare economics	405
Bertrand versus Cournot versus Stackelberg behavior	406
Nash bargaining	408
Contestable market theory	411
Game theory as a model of lobbying and political economy	412
The generality of game theory	412
10.11 Empirical considerations in markets subject to market power	413
10.12 Conclusions	415



<b>11 The welfare economics of information with applications to advertising and information policy</b>	<b>417</b>
11.1 The role of price expectations	418
The case of the producer	418
The case of the consumer	420
Goods used in combination with durables and physical capital	421
11.2 The role of quality information	423
11.3 Measuring the welfare effects of partial and misleading information	425
Welfare benefits of partial price information	426
Welfare benefits of partial quality information	429
Welfare costs of false and misleading quality information	429
Dependence on the timing of obtaining correct information	430
Producer technology adoption with errors in productivity perceptions	432
11.4 An example of government delay in disseminating contamination information	433
11.5 Apparent versus actual changes in tastes and preferences	437
True changes in preferences	437
Apparent changes in preferences	438
11.6 The welfare effects of advertising	439
Does advertising change tastes and preferences?	439
Advertising that disseminates correct information	441
Advertising with false information	443
Advertising and fads	444
11.7 Evaluation of public information policy	445
Truthfulness in advertising policy	446
Public price information and market assessment	446
Public quality information	448
Public experiment station and extension programs	448
Timing of information release	449
11.8 Conclusions	449
<b>Appendix to Chapter 11: Measuring the welfare effects of quality and information</b>	<b>451</b>
11.A Concepts of <i>ex ante</i> and <i>ex post</i> welfare measurement	451
11.B A model of consumer response to information	454
11.C Welfare effects of correct information and correctly perceived changes in quality	455
11.D The welfare effects of imperfect information	457
Correct initial information and incorrect subsequent information	459
Incorrect initial information and correct subsequent information	460
Incorrect initial and subsequent information	460
11.E Empirical considerations in welfare measurement of information effects	461
The case of perfect information	462
The case of imperfect information	463
Effects of disseminating incorrect information	464



	Effects of correcting information	464
	Effects of changing information in a world of imperfect information	465
11.F	Conclusions and potential applications	466
<b>12</b>	<b>Stochastic welfare economics with applications to agricultural policy analysis</b>	<b>467</b>
12.1	Consumer welfare with random prices and instantaneous adjustment	467
12.2	Producer welfare with random but anticipated prices	469
12.3	Can uncertainty improve welfare?	470
	Extensions to international trade	472
12.4	Additional considerations regarding welfare effects of price stabilization	473
	Nonlinearity	474
	The form of disturbances	475
	The role of market intermediaries	477
	Response of private storage to public intervention	479
	Dependence of storage costs on buffer stock variability	482
	Dependence of storage costs on time in storage	483
12.5	Instability with uncertainty	484
12.6	Welfare measures under risk aversion	487
	Expected utility	488
	Option value as the difference in <i>ex ante</i> and <i>ex post</i> WTP	489
	Aggregation of WTP under risk	492
	Dependence on the specifics of compensation	494
	Which welfare measure is appropriate?	495
12.7	Market-based estimation of <i>ex ante</i> WTP	499
12.8	An example	504
12.9	Agricultural price stabilization	506
	Dependence of who gains on specification	508
	Inability to anticipate favorable demand conditions	509
	Time in storage problems	509
	Risk aversion and supply response to stabilizing prices	510
	Adaptability of policy controls in stochastic circumstances	510
12.10	Federal crop insurance policy	511
	Moral hazard	512
	Adverse selection	513
	Decomposition of the incentive to participate	513
	Welfare effects of crop insurance	515
12.11	Conclusions	517
	<b>Appendix to Chapter 12: Producer welfare measurement under risk</b>	<b>518</b>
12.A	Risk aversion and expected utility maximization	518
12.B	Evaluating an expected output price change	519
12.C	Evaluating an expected input price change	521
12.D	Evaluating other changes affecting a risk-averse firm	523
12.E	Stochastic production and state-dependent compensation	524
12.F	Duality and integrability	526



<b>13</b>	<b>Nonmarket welfare measurement with applications to environmental economic policy</b>	<b>527</b>
13.1	Externalities	527
	Social optimality	529
	Policies for obtaining social optimality with externalities	533
	Evaluating policies in the presence of distortions	537
	Other issues in comparing policies	545
13.2	Public goods	549
13.3	Impure public goods	553
	Excludability, nonrivalry and the case of club goods	554
	Partial excludability and regulation of excludability under nonrivalry	556
	Partial rivalry due to congestion and physical limitations	558
	Quasipublic goods: joint public and private service flows	559
13.4	Measurement of external environmental benefits and costs	560
	Estimation of producer damage and abatement cost functions	560
	Valuation of consumer nonmarket benefits	562
	Survey techniques and contingent valuation	564
	Travel cost methods	566
	Hedonic models	568
13.5	Conclusions	571
<b>14</b>	<b>Intertemporal considerations in cost–benefit analysis with applications to natural resource economics</b>	<b>572</b>
14.1	The social discount rate	573
	The rationale for social discounting	576
	The market rate of interest as a social discount rate	576
	Theoretical determination of the discount rate: the time preference approach	576
	Practical determination of the discount rate	579
	Net present value versus internal rate of return	580
	Empirical use of discount rates and sensitivity analysis	585
14.2	Measuring welfare over time: cost–benefit analysis	586
	Accounting for changes in investment	587
14.3	Intertemporal aspects of the consumer problem	588
14.4	Intertemporal welfare analysis of risky projects and policies	590
14.5	Investing in research and development	593
	A basic model of R&D effects	594
	Distributional effects of R&D	594
	Distributional effects in related markets	596
	Open economy considerations	598
	R&D with imperfect competition	599
	Intertemporal evaluation of R&D	600
	Joint public–private investment	601
14.6	Economic welfare analysis of natural resource policy	603
	Nonrenewable resources	603



Renewable resources	609
Capital resources	611
14.7 A general framework for dynamic and sustainable economic welfare analysis	612
14.8 Conclusions	616
<b>Appendix to Chapter 14: Intertemporal welfare analysis with investment in producer capital and consumer durables</b>	<b>618</b>
14.A Intertemporal economic welfare analysis for producers	618
Intertemporal optimization	619
Intertemporal indirect expected utility	621
Evaluation of welfare effects of expected price changes	622
Specification of supplies and demands for purposes of estimation	623
State-dependent compensation for future welfare effects	624
Specification and estimation of future welfare effects	625
Welfare effects of changes in present and future risk	626
14.B Intertemporal economic welfare analysis for consumers	629
Consumer welfare with investment in consumer durables	629
Empirical considerations for estimation	632
State-dependent compensation for future welfare effects	633
Consumer welfare effects of future price risk	634
14.C Implications for social discounting	635
14.D Further generalizations with risk	636
<b>15 Conclusions and further considerations</b>	<b>639</b>
15.1 Emphasis on application	640
Theoretical applications	641
Empirical applications	641
15.2 Welfare maximization and cost–benefit analysis	642
15.3 Income distribution	643
15.4 Making economic welfare analysis useful in the policy process	643
Inefficiency of competitive equilibrium	644
Separation of efficiency and equity	645
The potential role of welfare economics	646
Distributional considerations based on public choice theory	647
Implications for economic welfare analysis	648
15.5 Summary	649
<i>Bibliography</i>	650
<i>Name index</i>	673
<i>Subject index</i>	678