

Contents

	<i>page</i>
Preface	ix
1 An introduction to the money-metric	1
1.1 Introduction	1
1.2 Some basic assumptions	4
1.3 The money-metric	6
1.4 Summary	11
2 The marginal utility of money as an integrating factor	13
2.1 Introduction	13
2.2 The Lagrange multiplier	13
2.3 An example	16
2.4 Two restrictions on consumer behavior	19
2.5 Roy's identity and the marginal utility of money	20
2.6 The integrating factor and the marginal utility of money	23
2.7 Restrictions on the parameters of consumer demand functions imposed by integrability	27
2.8 The equivalence or money-metric function	31
2.9 The compensation function	34
2.10 The relationship between the equivalent and compensating variations	36
2.11 An example	38
2.12 Summary	40
3 Calculation of the money-metric	41
3.1 Introduction	41
3.2 The Taylor series representation of the money-metric	44
3.3 Some alternative transformations	49
3.4 Improved numerical methods for calculating the money-metric	51

vi	Contents	
3.5	Method 1	52
3.6	An alternative procedure based on Simpson's rule	56
3.7	Difficulties involved in determining error bounds	58
3.8	An example	59
3.9	Summary	62
	Appendix 3.1	63
4	The approach of Dupuit and Marshall	67
4.1	Introduction	67
4.2	The seminal work of Dupuit	68
4.3	Early criticisms of consumer surplus	70
4.4	The treatment of consumer surplus in Marshall's <i>Principles</i>	72
4.5	Marshall's mathematical appendixes	74
4.6	Consumer surplus based on ordinary demand functions	79
4.7	Bishop's interpretation of Marshall	81
	Appendix 4.1	83
5	The Hicksian approach	85
5.1	Marshall's alternative definition of consumer surplus	85
5.2	Constancy of the marginal utility of money: an alternative approach	86
5.3	The compensating variation when "money" is an argument of the direct preference function	89
5.4	A digression: the Antonelli integrability condition	93
5.5	The compensating variation when "money" is not an argument of the direct preference function	96
5.6	Summary	100
6	Approximations based on consumer surplus	101
6.1	Introduction	101
6.2	The Paasche and Laspeyres index numbers	101

Contents	vii
6.3 Pearce's iterative technique	106
6.4 Harberger's approximate consumer surplus measure	109
6.5 Diewert's special case	113
6.6 Hick's approximations to the compensating and equivalent variations	114
6.7 Willig's error bounds	116
6.8 Seade's approximation procedure	118
6.9 A major problem	121
6.10 The additive and multiplicative errors associated with consumer surplus approximations	122
6.11 Summary	123
7 A reconsideration of the theory of index numbers	125
7.1 Introduction	125
7.2 The two fundamental criteria	126
7.3 The money-metric approach to index-number theory	129
7.4 The traditional approach to the theory of index numbers	130
7.5 A reconsideration of Fisher's test criteria	133
7.6 Alternative index-number formulas	135
7.7 Debreu's coefficient of resource allocation	137
7.8 Summary	138
8 The money-metric as a basis for calculation of social welfare functions	139
8.1 Introduction	139
8.2 Social welfare functions based on the money-metric	139
8.3 Frisch's approach	144
8.4 The aggregate money-metric indicator	146
8.5 An example	148
8.6 The social welfare loss function	152
8.7 Calculation of the aggregate money-metric from observable data	156
8.8 The compensation principle	158
8.9 Summary	161

viii **Contents**

9	Measurement of the social costs of monopoly	163
9.1	Introduction	163
9.2	The traditional approach to measurement of the social costs of monopoly	164
9.3	A second-order comparison	167
9.4	A simple model of monopoly practice	169
9.5	A comparison of alternative welfare measures	170
9.6	The effects of monopoly practices on the distribution of income	173
9.7	Summary	174
10	A final comment and conclusion	177
References		181
Index		185