CONTENTS

Preface v

Part 1: Introduction

1. Basic Concepts and Approaches

1.1. Planning and Incentives 1
1.2. Decision Theory 2
1.3. Social Choice Theory 5
1.4. Game Theory 7
1.5. Implementation Theory 11
1.6. Agency Theory 15
1.7. An Overview of the Book 19
1.8. Alternative Approaches to Planning 22
1.9. Conclusions 24

Part 2: Information and Communication

2. Bayesian Games and Implementation

2.1. Introduction 27
2.2. Bayesian Games 28
2.3. Bayesian Games with Communication 31
2.4. The Evaluation of Planning Schemes 37
2.5. Bayesian Implementation and Revelation 39
2.6. Conclusions 46
Mathematical Appendix 48

3. Organization of Communication

3.1. Introduction 51
3.2. Superior Organizations 52
3.3. More or Less Communication 54

3.4. Simultaneous or Sequential Communication 55
3.5. Prior or Posterior Communication 58
3.6. Contingent or Fixed Decisions 61
3.7. Multiple or Single Issue Decisions 62
3.8. An Example 64
3.9. Conclusions 71
Mathematical Appendix 76

Part 3: Delegated Decision Making

4. Choice-Implementation Models

4.1. Introduction 81
4.2. The Choice-Implementation Problem 82
4.3. The Pure Implementation Problem 85
4.4. Additional Simplifications 87
4.5. The Elimination of Choice-Implementation Preplay 89
4.6. Conclusions 91

5. Sufficient and Robust Information

5.1. Introduction 93
5.2. Preliminaries 94
5.3. Sufficient Statistics 96
5.4. The Sufficiency of Sufficient Statistics 98
5.5. The Necessity of Sufficient Statistics 99
5.6. Robust Information Systems 104
5.7. The Robustness of Sufficient Statistics 109
5.8. An Example 112
5.9. Conclusions 116
Mathematical Appendix 119

6. Finer, Complete and Ancillary Information

6.1. Introduction 123
6.2. Finer Statistics 124
6.3. Complete Statistics 129
6.4. Ancillary Statistics 131

6.5. Conclusions 134
Mathematical Appendix 137

7. Non-Verifiable Information

7.1. Introduction 143
7.2. Preliminaries 144
7.3. Mean Preserving Spread Increases 145
7.4. The First Order Characterization 146
7.5. The Value of Non-Verifiable Information 147
7.6. The Noah's Ark Case 154
7.7. A Numerical Example 155
7.8. Conclusions 158
Mathematical Appendix 162

Part 4: Delegated Information Production

8. Information Production Models

8.1. Introduction 167
8.2. Delegated Production of Verifiable Information 168
8.3. Delegated Production of Non-Verifiable Information 170
8.4. The Information Production Mechanism 172
8.5. Information Production and Information Use 176
8.6. Conclusions 178

9. Incentives in Information Production

9.1. Introduction 181
9.2. Private Information and Communication 182
9.3. The Incentive Issue 184
9.4. The Structure of Optimal Incentives 185
9.5. Incentives in Binary Models 190
9.6. Additional Public Information 195
9.7. Additional Private Information 196
9.8. Conclusions 198
Mathematical Appendix 201

10. Organization of Information Production

10.1. Introduction 209
10.2. Finer Investigations 210
10.3. Parallel Investigations 213
10.4. Parallelism in Binary Model 217
10.5. Sequential Investigations 232
10.6. Conclusions 235
Mathematical Appendix 238

Part 5: Evaluation of Specific Schemes

11. Incentives and Productivity Measures

11.1. Introduction 247
11.2. OR and Incentives 248
11.3. Data Envelopment Analysis 251
11.4. The Incentive Problem 254
11.5. Sufficient Production Frontiers 256
11.6. An Example 261
11.7. Further Results 265
11.8. Conclusions 268
Mathematical Appendix 270

Part 6: Summary and Conclusions

12. Summary and Conclusions

12.1. Introduction 277
12.2. Related Theories 278
12.3. Information and Communication 278
12.4. Delegated Decision Making 280
12.5. Delegated Information Production 281
12.6. Evaluation of Specific Schemes 283
12.7. Partial and Simplified Models 283
12.8. Conclusions 285
Bibliographic Appendix 287

References 291

Index 305