
Contents

	Preface	xv
1	Introduction	1
1.1	Optimal Employment Contracts without Uncertainty, Hidden Information, or Hidden Actions	4
1.2	Optimal Contracts under Uncertainty	7
1.2.1	Pure Insurance	8
1.2.2	Optimal Employment Contracts under Uncertainty	11
1.3	Information and Incentives	14
1.3.1	Adverse Selection	15
1.3.2	Moral Hazard	20
1.4	Optimal Contracting with Multilateral Asymmetric Information	25
1.4.1	Auctions and Trade under Multilateral Private Information	26
1.4.2	Moral Hazard in Teams, Tournaments, and Organizations	27
1.5	The Dynamics of Incentive Contracting	30
1.5.1	Dynamic Adverse Selection	31
1.5.2	Dynamic Moral Hazard	34
1.6	Incomplete Contracts	36
1.6.1	Ownership and Employment	37
1.6.2	Incomplete Contracts and Implementation Theory	39
1.6.3	Bilateral Contracts and Multilateral Exchange	40
1.7	Summing Up	42
Part I	STATIC BILATERAL CONTRACTING	45
2	Hidden Information, Screening	47
2.1	The Simple Economics of Adverse Selection	47
2.1.1	First-Best Outcome: Perfect Price Discrimination	48
2.1.2	Adverse Selection, Linear Pricing, and Simple Two-Part Tariffs	49
2.1.3	Second-Best Outcome: Optimal Nonlinear Pricing	52
2.2	Applications	57
2.2.1	Credit Rationing	57
2.2.2	Optimal Income Taxation	62

2.2.3	Implicit Labor Contracts	67
2.2.4	Regulation	74
2.3	More Than Two Types	77
2.3.1	Finite Number of Types	77
2.3.2	Random Contracts	81
2.3.3	A Continuum of Types	82
2.4	Summary	93
2.5	Literature Notes	96
3	Hidden Information, Signaling	99
3.1	Spence's Model of Education as a Signal	100
3.1.1	Refinements	107
3.2	Applications	112
3.2.1	Corporate Financing and Investment Decisions under Asymmetric Information	112
3.2.2	Signaling Changes in Cash Flow through Dividend Payments	120
3.3	Summary and Literature Notes	125
4	Hidden Action, Moral Hazard	129
4.1	Two Performance Outcomes	130
4.1.1	First-Best versus Second-Best Contracts	130
4.1.2	The Second Best with Bilateral Risk Neutrality and Resource Constraints for the Agent	132
4.1.3	Simple Applications	133
4.1.4	Bilateral Risk Aversion	135
4.1.5	The Value of Information	136
4.2	Linear Contracts, Normally Distributed Performance, and Exponential Utility	137
4.3	The Suboptimality of Linear Contracts in the Classical Model	139
4.4	General Case: The First-Order Approach	142
4.4.1	Characterizing the Second Best	142
4.4.2	When is the First-Order Approach Valid?	148
4.5	Grossman and Hart's Approach to the Principal-Agent Problem	152
4.6	Applications	157

4.6.1	Managerial Incentive Schemes	157
4.6.2	The Optimality of Debt Financing under Moral Hazard and Limited Liability	162
4.7	Summary	168
4.8	Literature Notes	169
5	Disclosure of Private Certifiable Information	171
5.1	Voluntary Disclosure of Verifiable Information	172
5.1.1	Private, Uncertifiable Information	172
5.1.2	Private, Certifiable Information	173
5.1.3	Too Much Disclosure	174
5.1.4	Unraveling and the Full Disclosure Theorem	175
5.1.5	Generalizing the Full Disclosure Theorem	176
5.2	Voluntary Nondisclosure and Mandatory-Disclosure Laws	178
5.2.1	Two Examples of No Disclosure or Partial Voluntary Disclosure	179
5.2.2	Incentives for Information Acquisition and the Role of Mandatory-Disclosure Laws	180
5.2.3	No Voluntary Disclosure When the Informed Party Can Be Either a Buyer or a Seller	186
5.3	Costly Disclosure and Debt Financing	190
5.4	Summary and Literature Notes	197
6	Multidimensional Incentive Problems	199
6.1	Adverse Selection with Multidimensional Types	199
6.1.1	An Example Where Bundling Is Profitable	200
6.1.2	When Is Bundling Optimal? A Local Analysis	201
6.1.3	Optimal Bundling: A Global Analysis in the 2×2 Model	204
6.1.4	Global Analysis for the General Model	212
6.2	Moral Hazard with Multiple Tasks	216
6.2.1	Multiple Tasks and Effort Substitution	218
6.2.2	Conflicting Tasks and Advocacy	223
6.3	An Example Combining Moral Hazard and Adverse Selection	228
6.3.1	Optimal Contract with Moral Hazard Only	230
6.3.2	Optimal Contract with Adverse Selection Only	231

6.3.3	Optimal Sales with Both Adverse Selection and Moral Hazard	231
6.4	Summary and Literature Notes	233
Part II	STATIC MULTILATERAL CONTRACTING	237
7	Multilateral Asymmetric Information: Bilateral Trading and Auctions	239
7.1	Introduction	239
7.2	Bilateral Trading	243
7.2.1	The Two-Type Case	243
7.2.2	Continuum of Types	250
7.3	Auctions with Perfectly Known Values	261
7.3.1	Optimal Efficient Auctions with Independent Values	262
7.3.2	Optimal Auctions with Independent Values	265
7.3.3	Standard Auctions with Independent Values	267
7.3.4	Optimal Independent-Value Auctions with a Continuum of Types: The Revenue Equivalence Theorem	271
7.3.5	Optimal Auctions with Correlated Values	276
7.3.6	The Role of Risk Aversion	278
7.3.7	The Role of Asymmetrically Distributed Valuations	280
7.4	Auctions with Imperfectly Known Common Values	282
7.4.1	The Winner's Curse	283
7.4.2	Standard Auctions with Imperfectly Known Common Values in the 2×2 Model	285
7.4.3	Optimal Auctions with Imperfectly Known Common Values	288
7.5	Summary	290
7.6	Literature Notes	292
7.7	Appendix: Breakdown of Revenue Equivalence in a 2×3 Example	294
8	Multiagent Moral Hazard and Collusion	297
8.1	Moral Hazard in Teams and Tournaments	299
8.1.1	Unobservable Individual Outputs: The Need for a Budget Breaker	301

8.1.2	Unobservable Individual Outputs: Using Output Observations to Implement the First Best	305
8.1.3	Observable Individual Outputs	311
8.1.4	Tournaments	316
8.2	Cooperation or Competition among Agents	326
8.2.1	Incentives to Help in Multiagent Situations	326
8.2.2	Cooperation and Collusion among Agents	331
8.3	Supervision and Collusion	338
8.3.1	Collusion with Hard Information	338
8.3.2	Application: Auditing	342
8.4	Hierarchies	351
8.5	Summary	360
8.6	Literature Notes	362
Part III REPEATED BILATERAL CONTRACTING		365
9	Dynamic Adverse Selection	367
9.1	Dynamic Adverse Selection with Fixed Types	367
9.1.1	Coasian Dynamics	369
9.1.2	Insurance and Renegotiation	379
9.1.3	Soft Budget Constraints	384
9.1.4	Regulation	388
9.2	Repeated Adverse Selection: Changing Types	396
9.2.1	Banking and Liquidity Transformation	397
9.2.2	Optimal Contracting with Two Independent Shocks	402
9.2.3	Second-Best Risk Sharing between Infinitely Lived Agents	408
9.3	Summary and Literature Notes	415
10	Dynamic Moral Hazard	419
10.1	The Two-Period Problem	420
10.1.1	No Access to Credit	422
10.1.2	Monitored Savings	426
10.1.3	Free Savings and Asymmetric Information	429
10.2	The T-period Problem: Simple Contracts and the Gains from Enduring Relations	431

10.2.1	Repeated Output	433
10.2.2	Repeated Actions	434
10.2.3	Repeated Actions and Output	435
10.2.4	Infinitely Repeated Actions, Output, and Consumption	447
10.3	Moral Hazard and Renegotiation	450
10.3.1	Renegotiation When Effort Is Not Observed by the Principal	450
10.3.2	Renegotiation When Effort Is Observed by the Principal	456
10.4	Bilateral Relational Contracts	461
10.4.1	Moral Hazard	468
10.4.2	Adverse Selection	468
10.4.3	Extensions	470
10.5	Implicit Incentives and Career Concerns	470
10.5.1	The Single-Task Case	473
10.5.2	The Multitask Case	475
10.5.3	The Trade-Off between Talent Risk and Incentives under Career Concerns	481
10.6	Summary	483
10.7	Literature Notes	484
Part IV INCOMPLETE CONTRACTS		487
11	Incomplete Contracts and Institution Design	489
11.1	Introduction: Incomplete Contracts and the Employment Relation	489
11.1.1	The Employment Relation	490
11.1.2	A Theory of the Employment Relation Based on Ex Post Opportunism	491
11.2	Ownership and the Property-Rights Theory of the Firm	498
11.2.1	A General Framework with Complementary Investments	500
11.2.2	A Framework with Substitutable Investments	515
11.3	Financial Structure and Control	521
11.3.1	Wealth Constraints and Contingent Allocations of Control	523

11.3.2	Wealth Constraints and Optimal Debt Contracts when Entrepreneurs Can Divert Cash Flow	534
11.4	Summary	549
11.5	Literature Notes	551
12	Foundations of Contracting with Unverifiable Information	553
12.1	Introduction	553
12.2	Nash and Subgame-Perfect Implementation	555
12.2.1	Nash Implementation: Maskin's Theorem	555
12.2.2	Subgame-Perfect Implementation	558
12.3	The Holdup Problem	560
12.3.1	Specific Performance Contracts and Renegotiation Design	563
12.3.2	Option Contracts and Contracting at Will	566
12.3.3	Direct Externalities	570
12.3.4	Complexity	572
12.4	Ex Post Unverifiable Actions	578
12.4.1	Financial Contracting	579
12.4.2	Formal and Real Authority	585
12.5	Ex Post Unverifiable Payoffs	588
12.5.1	The Spot-Contracting Mode	591
12.5.2	The Employment Relation and Efficient Authority	594
12.6	Summary and Literature Notes	597
13	Markets and Contracts	601
13.1	(Static) Adverse Selection: Market Breakdown and Existence Problems	601
13.1.1	The Case of a Single Contract	602
13.1.2	The Case of Multiple Contracts	604
13.2	Contracts as a Barrier to Entry	606
13.3	Competition with Bilateral Nonexclusive Contracts in the Presence of Externalities	609
13.3.1	The Simultaneous Offer Game	614
13.3.2	The Sequential Offer Game	623
13.3.3	The Bidding Game: Common Agency and Menu Auctions	628
13.4	Principal-Agent Pairs	630

13.5	Competition as an Incentive Scheme	636
13.6	Summary and Literature Notes	641
	APPENDIX	645
14	Exercises	647
	References	687
	Author Index	709
	Subject Index	715