

Cambridge University Press

978-0-521-17946-1 - Mechanism Design: A Linear Programming Approach

Rakesh V. Vohra

Table of Contents

[More information](#)

Contents

1	Introduction	<i>page</i> 1
1.1	Outline	5
2	Arrow's Theorem and Its Consequences	7
2.1	The Integer Program	8
2.1.1	General Domains	13
2.2	Social Choice Functions	14
2.2.1	Strategic Candidacy	17
2.3	Mechanisms and Revelation	20
3	Network Flow Problem	24
3.1	Graphs	24
3.2	Network Flow Problem	26
3.3	Flow Decomposition	30
3.4	The Shortest-Path Polyhedron	33
3.4.1	Interpreting the Dual	35
3.4.2	Infinite Networks	36
4	Incentive Compatibility	38
4.1	Notation	38
4.2	Dominant Strategy Incentive Compatibility	40
4.2.1	2-Cycle Condition	44
4.2.2	Convex Type Spaces	45
4.2.3	Convex Valuations	51
4.2.4	Roberts's Theorem	54
4.3	Revenue Equivalence	59
4.3.1	A Demand-Rationing Example	65
4.4	The Classical Approach	69
4.5	Interdependent Values	73
4.6	Bayesian Incentive Compatibility	77
5	Efficiency	79
5.1	Vickrey-Clarke-Groves Mechanism	79
5.2	Combinatorial Auctions	82

Cambridge University Press

978-0-521-17946-1 - Mechanism Design: A Linear Programming Approach

Rakesh V. Vohra

Table of Contents

[More information](#)

x	Contents	
	5.3 The Core	87
	5.4 Ascending Auctions	89
	5.4.1 Primal-Dual Algorithm	89
	5.4.2 Incentives	98
	5.4.3 Subgradient Algorithm	99
	5.5 Gross Substitutes	105
	5.6 An Impossibility	107
	5.7 A Recipe	109
6	Revenue Maximization	110
	6.1 What Is a Solution?	112
	6.2 One-Dimensional Types	114
	6.2.1 A Formulation	117
	6.2.2 Optimal Mechanism for Sale of a Single Object	118
	6.2.3 Polyhedral Approach	121
	6.2.4 Ironing and Extreme Points	126
	6.2.5 From Expected Allocations to the Allocation Rule	129
	6.2.6 Correlated Types	130
	6.2.7 The Classical Approach	133
	6.3 Budget Constraints	135
	6.3.1 The Continuous Type Case	139
	6.4 Asymmetric Types	140
	6.4.1 Bargaining	140
	6.5 Multidimensional Types	141
	6.5.1 Wilson's Example	143
	6.5.2 Capacity-Constrained Bidders	150
7	Rationalizability	160
	7.1 The Quasilinear Case	160
	7.2 The General Case	161
	<i>References</i>	165
	<i>Index</i>	171