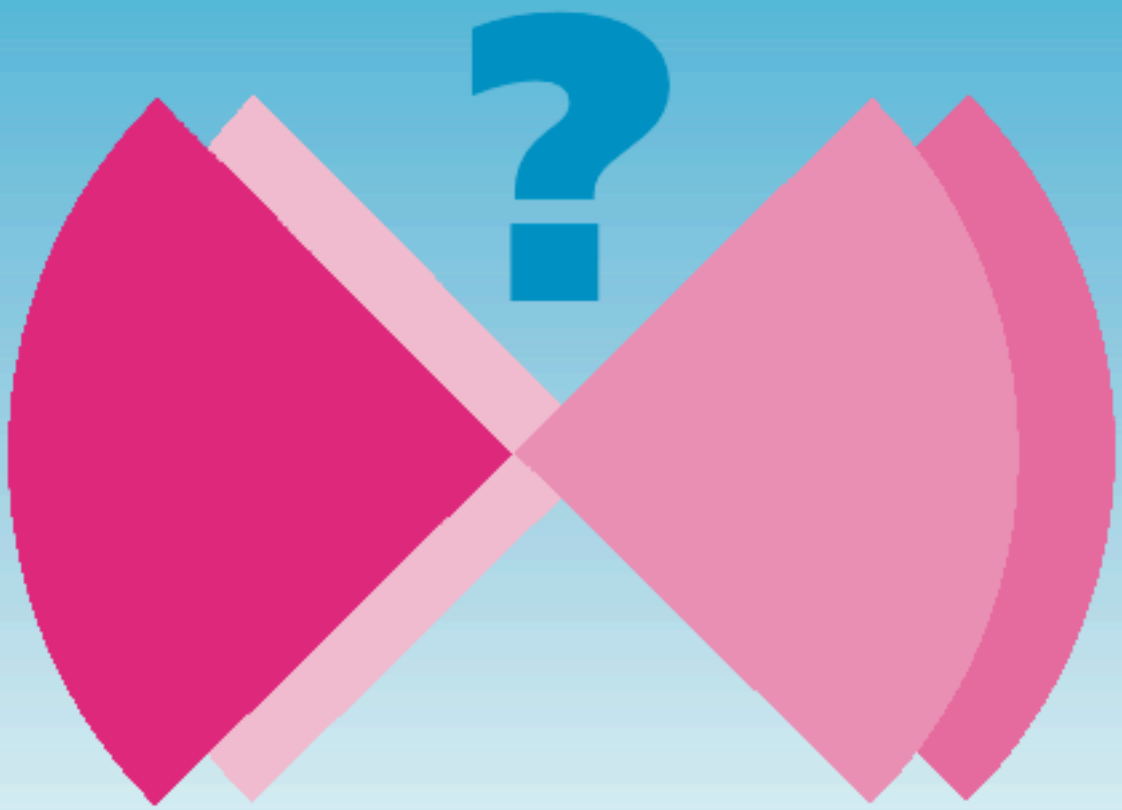
MORE FOR LESS



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ISBN 978-0-9551971-2-3

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FORWARD

The standard paradigm of economic theory is one of individualism and of competition and of private markets. It assumes fundamentally that individuals have sufficiently plentiful, sufficiently well defined and appropriately enforceable property rights for them to operate effectively in private markets. That in itself is a strong assumption. But it is also assumed that individuals and firms have complete information, that they will make optimizing decisions over attainable outcomes in accord with their private preferences, and that optimizing conditions for all agents will be such that there is no demand for collective action. It follows that in such models there are no distinctive roles for governments or for government related regulatory agencies. By contrast “More for Less” focuses on conditions of incomplete information and on processes of learning. In doing so it yields positive roles for collective action and, more particularly, for government agencies both to regulate output and consumption and to redistribute property rights. “More for Less” also shows how new approaches to macroeconomic as well as to individual and corporate economic decisionmaking can in turn yield new kinds of solutions to outstanding theoretical issues and outstanding practical problems.

The central idea in this work is that contradiction can play a key role in modelling and understanding processes of choice and of decision. This contrasts strongly with established approaches by economists and by mathematicians to theories of collective choice, to rational decisionmaking and to optimization. They have championed consistency, in the sense of non-self contradiction, as a fundamental criterion for theories of individual and of collective choice. But here a key observation to the contrary is that processes of exchange of commodities between one individual and another may be understood as processes leading to mutual gain *and* as processes leading to mutual loss since what one loses the other gains. In such circumstances, loss by each individual - and so by both individuals - is a precondition for gain by another individual, and so for collective gain. In that way processes of self contradiction are fundamental to processes of exchange in which less acts as if to potentiate more.

The interrelation between more for less principles and processes of exchange may be even more comprehensive if the preferences of the two individuals are also considered. Specifically, if exchanges are voluntary and if the commodities are both "goods" for both individuals in the sense that, other things equal, each would prefer more of both goods, then individuals engaged in them while preferring *more* of a commodity act as if to have less. I hope very much that formalizations and generalizations of these ideas in this book will convince you that more for less principles associated with principles of incomplete information, of self contradiction and of duality can bring you a new and stronger understanding of the wide variety of trade and bargaining and production and regulation related problems and policy oriented conclusions that are the subjects of the following chapters.

MORE FOR LESS

CONTENTS

1. ***More for Less***

In this chapter I establish very general more for less and more for nothing results which are then applied to gift and exchange related cases. These applications include a demonstration of the potential Pareto superiority of conditions of exchange over conditions wholly or partly prohibiting exchange. They also demonstrate the potential Pareto superiority of regulated over non regulated optima.

2. ***More for Less, Optimality and Generalised Kuhn Tucker Conditions***

In this chapter I first present a general framing result which comprehends discrete optimization problems and concave programming problems and classes of more for less and less for more phenomena as special cases. I then use that result to establish generalized Kuhn-Tucker conditions, not just for continuous and concave cases, but for a large class of nonlinear and discrete cases too.

3. ***More for Less: Purposive Contradiction, Standard Units and Monetary Units***

New kinds of motivation for standard units in general and for standardized monetary units in particular follow from the recognition that, in a context of freely chosen and monetarily based exchanges between persons, principles and processes of relative indeterminacy and incompleteness may not just be mathematically and physically inevitable: they may be individually and collectively desirable. With that context it is argued that relatively abstract and precise measures of weight, volume and value may correspondingly become individually and collectively desirable.

4. ***Purposive Contradiction and Gains from Exchange***

Standard competitive equilibrium analyses as well as game theoretic approaches to economic decisionmaking emphasize principles and processes of convergence of perceptions and of actions to realize pareto improved states strictly within initial resource constraints. But here the emphasis is on principles and processes according to which individuals might seek gains from divergence of perceptions with reference to otherwise relatively unknowable or unknown opportunities beyond initial resource constraints.

5. ***More for Less And Comparative Advantage***

In this chapter a number of new results are derived pertaining to exchanges of commodities and/or of factors between two individuals or trading blocs. An important conclusion is that, while Heckscher-Ohlin and Stolper-Samuelson results consistent with standard competitive models of international exchange emerge as special cases, in general such results will be at least weakly Pareto dominated by tax or subsidy regulated transfers of commodities and/or of factors. It is also shown how under very general conditions balanced value transfers between individuals or trade blocs are at least weakly Pareto dominated by unbalanced value transfers.

6. ***Purposive Contradiction, Intervening Duality and the Nature of Probability***

This chapter first presents the familiar matching pennies game in an unfamiliar constrained game form which can give explicit representation to the fairness or otherwise of the coin. Then the intervening duality idea is introduced and shown to make it possible, among other things, to give formal representations to games in which two individuals play using a coin which both believe to be fair relative to a system, yet potentially systematically biased towards themselves.

7. ***Intervening Duality and Bargaining with a Farmer-Landowner Example***

This chapter generalises the analysis and results of chapter 6. Firstly it introduces more general production related classes of cases in which individuals may seek to gain by making themselves dual to the duals of an intervening specification of production plans, strategies and payoffs. Secondly, through this explicitly economic context, the chapter introduces and analyses issues pertaining to framing (e.g. with reference to choices of production of crops vs "setaside"), to bargaining and to learning.

8. ***Constrained Games, Intervening Duality and Experimenter-Experiment Interactions***

In this chapter I focus first on framing related specification issues in general and then on a class of intervening duality problems which model learning related interractions between an experimenter and a subject via an intervening die casting game. That formulation is then used to obtain frame related explanations of Allais-like and packing related paradoxical outcomes. Finally I use generalized strategic equivalence ideas to introduce and analyze *tracer games,* which serve both to formulate a game prior to subsequent play with payoffs of a higher order, and to generalize all of the preceding analyses and results to nonconstant sum payoff cases.

9. ***Intervening Duality Based Analyses of Nonconstant Sum Bimatrix Games***

The purpose of this chapter is to extend intervening duality characterizations, and by that means to model explicitly subjectively interactive processes of specification and solution to non constant sum bimatrix games including the Prisoner's Dilemma and collusion, Stackelberg and Cournot solutions, to the duopoly problem.

10. ***Multiple Criteria and Framing of Decisions***

This chapter shows how a multi criteria approach to decisionmaking can be used as a general means of modelling the process of framing decisions. A multi objective goal programming approach is used to show how well known linear and nonlinear programming models, including the constant sum game, the distribution (transportation) model and peak load pricing problems can be seen as preemptively framed specializations of more general non preemptive specifications. In these specializations choices of optimal frames and of optima within those frames can be seen as potentially interactively optimizing parts of an overall multi criteria decisionmaking process.

11. ***The Distribution Problem, the More for Less (Nothing) Paradox and Economies of Scale and Scope***

In this chapter I develop a goal programming approach to the representation and resolution of the more for less and more for nothing paradoxes in the distribution problem. In doing so I establish new ways of deriving more for less and more for nothing results in relation variously to competitive and non-competitive market structures. Within these contexts I also introduce generally applicable definitions of economies of scale and scope and illustrate them by means of extended numerical examples.

12. ***Economies of Scale and Scope, Contestability, Windfall Profits and Regulatory Risk***

In this chapter I develop implications of results on economies of scale and scope for contestability and regulation. This is done using a goal programming approach endogenizing regulatory frameworks in a multiperiod and multiregion monopolistic and oligopolistic analysis. This explicitly spatial approach leads to useful distinctions between industrial contestability and market contestability and a multiperiod contestability based regulatory model. That model is then extended to a state preference framework with regulatory risk and windfall gains and losses.

13. ***Regulatory Risk, Regulatory Uncertainty and a Teaching Role for Regulators***

In this chapter I extend results in chapters 11 and 12 on economies of scale and scope and on regulatory regimes based on a distinction between industrial and market related contestability. The main focus here is on conditions of regulatory uncertainty as distinct from regulatory risk. Key ideas are that uncertainty may arise from incomplete knowledge of potentially forthcoming states for outputs and/or from incomplete knowledge of the probabilities with which such states may be forthcoming. Uncertainty may arise, too, on the production side from incomplete knowledge of production processes. It follows that, in addition to regulatory prohibitions or taxes or subsidies, a regulator may usefully use: i) statements of the probabilities with which future states may be forthcoming and/or; ii) policies designed to alter innovation costs, as two distinct means of securing greater conformity between the aims of a regulator and the decisions of those regulated.

14. ***Frame Related Restrictions, Cores and Shapley Values***

In this chapter I extend frame related ideas to secure an explicitly frame related generalization of linear programming characterizations of the emptiness or nonemptiness of the core of an N person characteristic function game by Scarf and by Charnes and Kortanek. As an extension of this idea I then derive an explicitly framed linear programming characterization of Shapley's coalition building motiv-ation for the derivation of the Shapley Value for an N person game. In that way I not only generalize the Shapley Value to cases in which the number of players is endogenous, I also determine critical values of framing parameters which in turn determine conditions under which the Shapley Value is (or is not) in the core. In that context I introduce the idea of *negative* probabilities associating these with differences from relatively larger event spaces - and thence with the anticipation of *growth* of an event space. (Here such growth will be induced by opportunities to grow coalitions and in that way to realize previously unattainable probabilities of formation of relatively larger coalitions of cardinality $S \subseteq N$.)

ACKNOWLEDGEMENTS

Chapters 1 through 5 are original. The remaining chapters have appeared elsewhere as follows:

6. "Purposive Contradiction, Intervening Duality and the Nature of Probability", *European Journal of Operational Research*, 86, 366-373,1995.
7. "Intervening Duality and Bargaining with a Farmer-Landowner Example" *European Journal of Operational Research,* 113, 3, 688-699, 1999.
8. "Constrained Games, Intervening Duality and Experimenter-Experiment Interactions", *European Journal of Operational Research*, 110, 2, 326-341, 1998.
9. "Intervening Duality Based Analyses of Nonconstant Sum Bimatrix Games" *Journal of Interdisciplinary Mathematics,* 1, 2, 175-196, 1998.
10. "Multiple Criteria and the Framing of Decisions", *Journal of Information and Optimization Sciences,* 19, 1, 25-42, 1998.
11. "The Distribution Model, the More for Less (Nothing) Paradox and Economies of Scale and Scope", *European Journal of Operational Research,* 121,1, 92-104, 2000.
12. "Economies of Scale and Scope, Contestability and Windfall Profits and Regulatory Risk", *Manchester School,* 68,6, 701-722, December 2000.
13. "Regulatory Risk, Regulatory Uncertainty and a Teaching Role for Regulators." *Foresight and Precaution. (Proceedings of the ESREL 2000 Conference on Foresight and Precaution),* Edinburgh, 1649-1657, Balkema, Rotterdam, 2000.
14. "Frame Related Restrictions, Cores and Shapley Values" *Journal of Interdisciplinary Mathematics*, 3, 57-81, 2000.