

Edgeworth's conjecture in economies with a continuum of agents and commodities*

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Submitted October 1988, accepted April 1990

Abstract: This paper contains the following results for economies with infinite dimensional commodity spaces. (i) We establish a core–Walras equivalence theorem for economies with an atomless measure space of agents and with an ordered separable Banach commodity space whose positive cone has a non-empty norm interior. This result includes as a special case the Aumann (1964) and Schmeidler–Hildenbrand [Hildenbrand (1974, p. 33)] finite dimensional theorems. (ii) We provide a counterexample which shows that the above result fails in ordered Banach spaces whose positive cone has an empty interior even if preferences are strictly convex, monotone weakly continuous and initial endowments are strictly positive. (iii) Using the assumption of an ‘extremely desirable commodity’ (which is automatically satisfied whenever preferences are monotone and the positive cone of the commodity space has a non-empty interior), we establish core–Walras equivalence in any arbitrary separable Banach lattice whose positive cone may have an empty (norm) interior.

1. Introduction

Two of the most widely used solution concepts in economic theory are the competitive equilibrium and the core. The first concept is usually associated with Walras, and refers to the non-cooperative allocation of resources via a price system. The essential idea behind this concept is that when agents are assumed to know only the price system (which they treat parametrically) and their own preferences and endowments, then are allowed to trade freely in a decentralized market, this process results in allocations which maximize agents' utilities (subject to their budgets) and equate supply with demand.

*This is a revised version of our paper entitled ‘Core–Walras Equivalence in Economies with a Continuum of Agents and Commodities’, written in 1986. We are indebted to Jean-François Mertens for his thoughtful comments and suggestions. Also we would like to acknowledge helpful discussions with Harrison Cheng, M. Ali Khan, Joe Ostroy, Ket Richter, and Bill Zame. A referee helped us improve the final version, and thanks are due to him for his useful comments. Needless to say, we are responsible for any remaining shortcomings.