

Equilibria in Markets with a Continuum of Agents and Commodities

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Abstract. We prove the existence of an equilibrium for an exchange economy with a measure space of agents and with an infinite dimensional commodity space.

1. Introduction

The purpose of this paper is to prove the existence of a competitive equilibrium for an economy with a measure space of agents and with an infinite dimensional commodity space.

The principle ways our result differs from that of Bewley (1990) are: (a) we assume that the consumption set of each agent is a weakly compact subset of either the space of continuous functions on a compact metric space $C(X)$, or the Lebesgue space L_∞ ; (b) the measure space of agents need not be atomless; and (c) we provide a direct proof, i.e., we do not need to use the Aumann (1966) existence result as Bewley does.

The paper proceeds as follows: Section 2 contains some notation and definitions. In Section 3 the main result of the paper is stated. An auxiliary result is stated in Section 4 and its proof is given in Section 5. Section 6 contains the proof of the main theorem. Finally some concluding remarks are given in Section 7.

2. Notation and Definitions

2.1 Notation.

2^A denotes the set of all nonempty subsets of the set A ;

$\text{con } A$ denotes the convex hull of the set A ;

$\overline{\text{con}}A$ denotes the closed convex hull of the set A ;

\setminus denotes the set theoretic subtraction;

\mathbb{R}^ℓ denotes the ℓ -fold Cartesian product of the set of real numbers \mathbb{R} ;

\emptyset denotes the empty set.