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Existence of a competitive equilibrium when all goods are indivisible*

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Abstract

This paper investigates an economy where all consumption goods are indivisible at the individual level, but perfectly divisible at the overall level of the economy. In order to facilitate trading of goods, we introduce a perfectly divisible parameter that does not enter into consumer preferences – fiat money. When consumption goods are indivisible, a Walras equilibrium does not necessarily exist. We introduce the rationing equilibrium concept and prove its existence. Unlike the standard Arrow-Debreu model, fiat money can always have a strictly positive price at the rationing equilibrium. In our set up, if the initial endowment of fiat money is dispersed, then a rationing equilibrium is a Walras equilibrium. This result implies the existence of a dividend equilibrium or a Walras equilibrium with slack.

Keywords: competitive equilibrium, indivisible goods.

JEL Classification: C62, D51, E41.

1 Introduction

Most economic models assume that goods are perfectly divisible. The rationale behind this assumption might be that the minimal unit of a good is sufficiently insignificant so that its indivisibility can be neglected. Then, one should be able to approximate an economy with a sufficiently small level of indivisibility of the goods, by some idealized economy where all goods are perfectly divisible. Consequently, it would be reasonable to expect that a competitive equilibrium in this idealized economy should be an approximation of some competitive outcome of the economy with indivisible goods. In the case of a finite set of consumers, Henry [14] shows that indivisibility of goods may lead to non-existence of a Walras equilibrium. Shapley and Scarf [27] show that even the core may

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