The Stock Market and the Vacancy Rate

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This paper analyzes the vacancy rate in competitive markets. It is shown that the competitive vacancy rate is suboptimal and that it can be higher or lower than the optimal rate.

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1 Introduction

Stochastic fluctuations in demand are common to all sectors in the economy. They present, however, a more acute problem for certain industries where the goods cannot be stored and are characterized by a high degree of lumpiness. In that case when supply exceeds demand there is a permanent loss of resources. Consider, for example, the case of an airplane that must fly when half of its seats are empty. In case of a shortage, the problem is even more serious if, in addition, demand is highly random and cannot be postponed. One example mentioned by Weisbrod (1964) is an individual that has to look for public transportation every time his car breaks down.

The ability of competitive markets to deal with this kind of problem efficiently has been a matter of controversy. Weisbrod argues that although the consumers value the availability of a service that they seldom use, the firms have no way of charging the potential costumer for this availability. In consequence, the firms will not allocate enough resources to the provision of a service whose demand is stochastic. An opposite view is presented by Prescott (1975) who claims that, when firms announce prices before the level of demand is known, the vacancy rate will be optimal.

In this paper, we attempt to look at this issue more closely. We construct a two-sector general-equilibrium model that, following Diamond
emphasizes the role played by the stock market in the allocation of resources under uncertainty. Our goal is to use the existing results on economies with incomplete markets to clarify the issues raised by both Weisbrod and Prescott.

We start by characterizing the first-best solution and the stock-market equilibrium. We show that unless the consumers are risk neutral the second equilibrium is not Pareto optimal. This result is consistent with Diamond's findings. In his model, however, the stock-market equilibrium gave a second-best allocation, which is Pareto optimal given the limitations imposed by the lack of complete markets. Hart (1975) and Grossman (1977) reported difficulties in extending Diamond's results to other scenarios. To avoid these difficulties, we look at this topic in a slightly different way. We inquire if there is some form of taxation that can improve welfare without introducing new markets. Since we find that this is possible we conclude that the competitive vacancy rate is not "optimal" even in a restricted sense.

We extend the analysis beyond the issue of optimality. First we examine how the stock market affects the allocation of resources between a "safe" and a "risky" sector. It is found that, rather surprisingly, risk averse consumers may allocate more resources to the risky sector in the stock-market equilibrium than in the first-best solution. However, the possibility of underinvestment in the risky project also exists and the outcome depends on the different parameters of the model.

We consider two different price mechanisms. In the first case, the equilibrium price is determined after the level of demand is known. Following Prescott, the second case assumes that firms must post prices before the realization of demand. We show that precommitment does not solve the inefficiency of a spot-market equilibrium. We conclude by characterizing the situations where the inefficiency of the competitive solution is likely to be severe and one can expect the development of institutions that provide the service more efficiently.

2 The Model

There are two goods in this economy. The first one denoted by $B$ (bread) is divisible and it always increases utility. Consumers have the option of buying either one or zero units of the second good denoted by $T$ (a seat in a plane) and it is assumed that consumption of good $T$ increases utility only when one needs to travel. The consumer's traveling needs are denoted by $\gamma$. The variable $\gamma$ can take only two values: $\gamma$ equals zero when the consumer does not need to travel and $\gamma$ equals $\theta$ when the consumer wants to travel. Utility depends upon the consump-