Ensuring a Complete Asset Structure in a General Equilibrium Model with Production and Uncertainty

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Abstract

The existence of complete markets, that is of a complete asset structure, is a basic question when studying economies with time and uncertainty, related to the equivalence between Arrow-Debreu equilibria and Radner equilibria, Pareto Optimality, rm behavior and asset formation, and the existence of equilibrium. These aspects have been analyzed mainly for pure exchange economies, some points remaining unexplored when production is included. For example, the introduction of complete markets in a pure exchange economy doesn t imply any problem as the dividend matrix of assets is exogenous, but once production is incorporated, the existence of complete markets becomes an endogenous feature. This is speci cally the subject we are going to study for a standard non-aggregate dynamic general competitive equilibrium model with production and uncertainty, where the asset structure is endogenous. Both for an Arrow-Debreu equilibrium and for a Radner equilibrium we derive two sets of conditions to ensure a complete asset structure, with a double interpretation. The rst one, well known, imposes as a necessary condition a number of production processes at least equal to the number of states of the world. The second group, of sufficient conditions, supposes that these processes are each specialized in a different state of the world. In economic terms and following one of the possible interpretations, we show that if the economy can generate a speci c production process for each state of the world, then the asset structure is complete and therefore the equilibrium is Pareto optimum.

JEL Classi cation: D4, D5

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