

A computational model of a sequential exchange economy with assets and goods markets under the temporary equilibrium approach

Marco Raberto, Linda Ponta, Andrea Teglio, Silvano Cincotti

DIBE, University of Genoa, Via Opera Pia 11a, 16145 Genova, Italy

Corresponding author e-mail: raberto@dibe.unige.it

This paper presents a model of an exchange economy characterized by physically differentiated goods, several possible states of nature and a number of financial securities by which agents transfer purchasing power across time and economic states. Trading is organized sequentially over time by means of spot markets for goods and financial securities, which are not complete in the Arrow-Debreu sense, i.e., there is at least one state of the economy for which a security market is missing. In this scenario, consumption pattern decisions are made, but either binding intertemporal or state-contingent contracts are not fully available and foresight is not perfect. Thus, agents make a consumption plan based on expectations of future prices of commodities and purchase two types of objects: goods (to consume now) and assets (to carry purchasing power over to future periods when they can be traded for consumption goods). Thus, successive spot product markets are interlinked with each other via asset markets. Agents follow an utility maximizing behavior subject to a budget constraint and are characterized by heterogeneous expectations on future prices and returns, i.e., they associate different future prices and returns to the same state of the economy. Agents are also characterized by subjective probabilities on future events, i.e., they associate different probabilities distribution to the states of the economy. According to this viewpoint, agents have imperfect foresight and form expectations concerning the future based on their information about the state of the economy in current and past periods. This scenario is known as a temporal equilibrium approach. Under this viewpoint, due to the large dimension of models, analytical results are usually missing and computer simulations can be valid tools for research. Long-run properties of the model regarding price dynamics of goods, statistical distribution of returns and agents' wealth distributions are studied via computer simulation.