

Factor Mobility, Goods Tradability, and the Efficient Allocation of Disaster Risk

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In the face of income risks induced by natural disasters and market fluctuation, farming households are more and more choosing either to cut production plan or to get access to off-farm income sources. This shrinking trend in the agriculture sector will possibly do harm to the development of the entire economy, and some incentives should be created to encourage agriculture production. Governments are adopting various kinds of policies to try to “lock” farmers in the agriculture sector, either in the way of lump-sum transfer or heavily subsidized crop insurance program. The purpose of this study is to discuss and model basic conditions that justify such kinds of policies.

This paper follows the most classic discussions in the field of public economics on resources allocation and government policy in a world with multi-jurisdiction and mobile factors. It uses a simple two-region and dual-economy model with mobile rural households moving between rural and urban sectors (regions). It describes the world with disaster risk using the concept of collective risk developed by Malinvaud (1972, 1973). Moreover, its assumption on factor mobility is abstracted from the situation in China.

There are three cases discussed in this study: 1) in the benchmark case, it is the only way for farmers to reduce income risks to become a seasonal worker; 2) in the social optimum case, the social optimum allocation of labor force and risks is achieved through the centralized redistributive policy; 3) in the decentralized equilibrium case, the Malinvaud-Arrow Insurance system for insuring collective risk is introduced and the welfare state of the society is discussed. Two key issues, factor mobility and goods

tradability are discussed in the model, and as in most cases they are likely to induce externality in resource and risk allocation. Factor mobility is represented by the transaction costs which a labor has to pay in the process of becoming a seasonal worker while goods tradability is denoted by the transaction costs in the process of delivering goods between rural and urban areas.

The result of model analysis shows that without government redistributive policy or market insurance, the number of farming households leaving for urban sectors is found to be greater than the social optimum one. The equilibrium achieved by decentralized approach (Malinvaud -Arrow Insurance) is sub-optimum due to the externality induced by goods tradability. Household mobility in this model will not induce externality because of the assumption of constant-elasticity-of-substitution (CES) preference which preserves the value of rural goods irrespective of the state of the world. Then government intervention is proposed to internalize the externality in the decentralized equilibrium. One option is *ex ante* lump-sum transfer in the form of migration (seasonal move) tax/subsidy and another one is a proportional subsidy on insurance premium. The result of the model implies that in many less developed countries where government aid and disaster insurance are not available yet, such policy and institutions should be designed that may encourage farmers to continue their on-farm production. Another possibility is government intervention in the form of the government-sponsored private crop insurance program which is commonly adopted by many countries.