Imperfect Effort of Disaster Mitigation and Dynamic Policy of Micro-credit

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With its new design and operation, micro-credit has been becoming more and more helpful and popular in the world, especially in undeveloped areas. The similar thing happened in rural China. Under the monitoring of the People's Bank of China (PBC), Rural Credit Cooperatives (RCCs, installed in 1950s) are the main institutions that supply farmers with micro-credit loan. To rural China, the micro-credit loan from RCCs does do much positive effect including supplying farmers with necessary production capital, increasing farmers' income and completing rural financial system. Although that, RCCs' micro-credit loan still have some insufficiencies one of which is that the repayment rate is not adequate. According to local survey, the repayment rate is influenced by natural disaster, profit rate of agricultural production and farmers' credit reliability. As for the failed repayment caused by natural disaster, RCCs will ask farmers to pay in next period. It is natural for us to have the following questions: RCCs' present micro-credit loan policy is efficient or not; If not, how to improve it?

According to above motivation, this paper introduced dynamic policy analysis for studying the micro-credit loan policy of RCCs. We suppose RCCs' final purpose is to maximize farmers' long-term utility (social utility). That means RCCs should make sure their micro-credit loan policy is always optimal for whole social utility. In other words, the policy should be dynamic consistent.

For simplifying the analysis, we supposed a two-period model consists of two parties: RCCs and farmers. Based on that model, we would like to study the following four cases.

(1) In case I (as the benchmark), farmers and RCCs both have perfect information about each other and make long-term optimal choice: farmers' optimal disaster-mitigation effort and RCCs' optimal loan size. And then, the whole social utility reach maximum.

(2) In case II, farmers think they will get the loan in period two even they failed to repay at the end of period I. In other words, there is some kind of incredible threat from RCCs to farmers. That makes RCCs' micro-credit loan policy not dynamic consistent and farmers' disaster mitigation effort not optimal.

(3) In case III, RCCs declare that farmers should repay the loan and interest at the end of period two if failure repayment caused by natural disaster at the end of period one. We found this kind of mechanism design makes RCCs' micro-credit loan policy dynamic consistent. But, at the same time, the whole social efficiency is damaged.

(4) In case IV, based on the theory of Cooperative Game, we try to make RCCs' micro-credit loan policy more efficient for social utility while still dynamic consistent.

As for the future work, we would like to do the following jobs.

(1) Expand present model by changing parties' pure strategies to mixed ones;

(2) Consider about farmers' short-term behavior at the end of period two.