Moral Hazard, Risks and Index Insurance in the Rural Credit Market: A Framed Field Experiment in China

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A Simple Two-period Model:
Farmers from the rural credit market. (Boucher et al. 2008)
credit diversion. (Carter, 1988)
creating several types of moral hazard problems (Stigliz & Weiss, 1981).

Farmers are distributed on two dimensions—risk aversion and ethical costs.
Farmers suffer ethical costs if choosing to divert credit.
Farmers make discrete choices of

- If taking a loan, whether to divert loans for consumption
- If not taking a loan, whether to invest in production

This paper focuses on one of the most prominent and pervasive moral hazard problems—index insurance contract is based on a variety of external indices that are correlated with

Framed Experimental Games: Farmers make discrete choices of
- If taking a loan, whether to divert loans for consumption
- If not taking a loan, whether to invest in production

For each quintile group, we run the following regression equation:

\[ Y_{ijg} = \beta_1 + \beta_2 X_{ijg} + \beta_3 R_{ijg} + \beta_4 A_{ijg} + \beta_5 T_{ijg} + \epsilon_{ijg} \]

where \( Y_{ijg} \) is a binary random variable that equals 1 if the subject \( i \) of game session \( j \) chooses credit diversion in game \( g \), and equals 0 otherwise. \( X_{ijg} \) is individual-level characteristics; \( R_{ijg} \) is regional fixed effects; \( A_{ijg} \) are individual-level control variables; \( T_{ijg} \) are regional fixed effects.

Heterogeneous treatment effects:
Step 1: Construct an index of predicted ethical costs, \( \hat{e}_i \), based on farmers’ past experience of credit diversion measured in the household survey.
Step 2: Divide the whole sample into five groups based on the quantile of \( \hat{e}_i \). For each quintile group, we run the following regression equation:

\[ Y_{ijg} = \beta_1 + \beta_2 X_{ijg} + \beta_3 R_{ijg} + \beta_4 A_{ijg} + \beta_5 T_{ijg} + \epsilon_{ijg} \]

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The effect of index insurance on credit diversion is heterogeneous depending on farmers’ risk preferences and ethical costs associated with violating loan contracts.

Conclusions
- Index insurance increases farmers benefit from full investment by offering consumption smoothing and higher future incomes, while reducing the welfare from credit diversion.
- The experiment shows that index insurance reduces credit diversion by 75.8% and risk rationing by 46.6%.
- The treatment effect varies on risk preference and ethical costs associated with credit diversion.

Policy Implications
This study has important policy implications for stimulating credit supply to agriculture and reducing credit rationing.

Results
- Credit non-diverters are likely to benefit from and purchase index insurance, while credit diversers are not.
- For credit non-diverters, index insurance provides consumption smoothing and increases future incomes by preventing loan default.
- For credit diversers who are already implicitly insured by diverting credit from risky investments to consumption, index insurance increases their consumption risks and can even lower expected consumption.

The availability of index insurance encourages farmers to choose full investment of loans instead of credit diversion.

The effect of index insurance on credit diversion is heterogeneous depending on farmers’ risk preferences and ethical costs associated with violating loan contracts.