Group contracts for index-based insurance

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This note was prepared for the FERDI workshop on group-based index insurance, June 21-22, 2011, Clermont-Ferrand.

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Index-based contracts are crucial innovations on the micro-insurance market. By making the contract contingent on the value taken by an objective and exogenous index, parties should manage to minimize transaction costs, in particular those due to imperfect and asymmetric information. In turn this innovation should allow poor people traditionally excluded from this market to have access to some insurance, most notably agricultural smallholders. In the last decade, many pilot programs have been set up throughout the developing world to evaluate index-based insurance products. So far, the individual willingness to adopt these new products has been low, even when they are bundled with other financial products such as credit. This led several actors to question the business model that consists in selling those products directly to the individual farmer and to develop other models where the index-based product is sold to a group or to an intermediary (see R. Leftley, brief 4, in Hill and Torero (2009)).

Whereas group contracts have been extensively studied for health insurance or credit, much less is known for index-based insurance. Group contracts are widespread in health insurance where they are designed to cope with the adverse selection issue. Group contracts pool the individual risks and mitigate the problem of having only people with the highest level of risk buying the insurance. This argument does not hold for weather index insurance. The index is publicly available and farmers generally do not possess private information on its statistical properties. Absence of the adverse selection issue is one of the main arguments in favour of index-based products. In the case of credit, group contracts have been advocated because they efficiently use peer pressure to cope with moral hazard. Again, this argument cannot hold for index-based insurance: the index is exogenous and the policy holder's actions have no impact on it.

To understand why group contracts might be attractive in the case of index-based products, it is necessary to scrutinize the different reasons why the value of the index-based insurance for a group might be higher than the sum of its values for the individuals composing the group. We list below some potential explanations.

- **1.** Group contracting allows the insurer to cover the fixed costs associated with serving a geographical area (installing a weather station, investing in knowledge of the local micro-climate).
- **2.** Group contracting minimizes transaction costs. There is only one contract to underwrite and the amount insured is bigger than with individual contracts.
- **3.** When dealing with a group, the insurer negotiates with the group representative who is presumably an individual with a good understanding of insurance and other financial products.
- **4.** In some groups, individuals already insure each others more or less formally against idiosyncratic shocks. Selling individual index-based insurance potentially creates a free-riding problem when farmers do not buy the insurance because they anticipate the redistributive transfers they will receive from the group members who bought it.
- **5.** Still in those groups, selling individual insurance against the covariate shocks raises the utility of individuals in autarky. This in turn might challenge the sustainability of the informal risk sharing agreement and lead to an overall decrease in the group welfare: a crowd-out effect (see Attanasio and Rios-Rull, 2000, for the formal argument).
- **6.** The free-riding and crowd-out effects mentioned above are the consequence of externality effects that index-based insurance has on pre-existing arrangements. These externalities are likely to operate not only when individuals in the group insure each others but whenever the group is a nexus of pre-existing contracts linking individuals, those contracts being other financial contracts (e.g., credit or savings) or

even non-financial contracts (e.g., production contracts).

● **7.** Weather hazards can have consequences on club goods (roads for flood…) and group insurance is the best way to cover those collective assets.

● **8.** When the group is a cooperative, group insurance can be used as a collateral in contractual agreements with other parties (banks, other supply chain intermediaries, retailers) enhancing global efficiency.

A simple model can be built to scrutinize the externalities involved in weather index insurance decisions. It is based on the following specification for individual preferences: the utility of individual i in a group of N members depends on his own wealth and on the aggregate wealth of the group. Therefore, those individuals have social preferences. This is a rather natural hypothesis for village communities where interlinked transactions lead people to care about the wealth of others in the community. We propose the following rationale for this specification. If the group of individuals that we consider produces some local public good, then equilibrium utilities of individuals depend on those two variables. This remains true for several widely used specifications of individual preferences and under several decision rules for the provision of the local public good. We believe that this specification is particularly suitable to study the demand for weather insurance in agricultural cooperatives or other productive groups of individuals.

In such a setting, individual insurance decisions may exert a positive externality on others and create a free-riding problem. This may occur because the decision by one individual to take insurance involves a reduction in the risk associated to the aggregate wealth in the sense of second-order stochastic dominance. This will be valued by other group members provided the premium paid to get insured is not too high. As a consequence, the sum of the individual inverse demands for insurance, i.e. the sum of the individual risk premia, may be lower than what the group as a whole would be ready to pay, i.e. the group risk premium. Offering the insurance policy at the group level may increase demand. When the two variables (i.e. own wealth and aggregate wealth) that enter the utility function of individuals are complements, a risk averse individual may prefer to stay uninsured if other group members do not take up the insurance. This occurs because individuals prefer to be rich when the group as a whole is rich and poor when the group as a whole is poor rather than poor when the group is rich and rich when the group is poor. Coordination of group members is hence necessary for uptake.

The practical relevance of these explanations depends on the group considered. Villages and producer cooperatives are certainly different kinds of groups with a different impact of group contracting. Nevertheless, and whatever the group, the potential benefits of group contracts must be weighted against their potential costs. Those costs arise from the limited ability of these contracts to reach individuals and to increase *in fine* the poor's welfare. We list below potential reasons why this may happen.

● **1.** When a group negotiates the insurance policy, it may lack information on the needs of individuals and does not buy the adequate coverage.

● **2.** When a group of individuals receives contingent transfers from the insurance company, it faces a collective action problem and may decide to use that money inefficiently.

● **3.** When the group is a producer cooperative or any other supply chain intermediary, the surplus coming from the insurance contract may be easily captured by the other side of the market through the contracts it signs with the cooperative or the intermediary. While this may occur in the case of individual insurance, it is likely to be exacerbated in the case of group insurance.

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In light of these different arguments in favour or against group contracting for index-based insurance products, it is likely that there is no systematic superiority of one type of contracting versus the other (group vs individual). Importantly, the following characteristics of the targeted group are certainly crucial: its ability to solve collective action problems, its ability to deal with free-riding, its knowledge and skills in financial contracting, and its experience in providing insurance to group members.

► **References**

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policy brief
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August
2011
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