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PROBLEMS OF CREDITING AND INSURANCE IN AGRICULTURE

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Abstract

Small farmers in developing countries pay higher insurance premium or interest rate and yet, rural loans or insurance are rather scarce for them. Does it mean rural insurance/loans in undeveloping countries are not profitable? Many analysis and trends in the global financial services market to the contrary, as evidenced by numerous references, yet in developing countries there are some problems in development of these types of financial services, which could significantly assist in the development agriculture. Adverse selection in insurance markets refers to the situation where insurers find it impossible or very expensive to distinguish between high-risk and low-risk insurance applicants and thus prices insurances contracts at the average premium for all individuals, which is inappropriate.

Key words: *insurance, credit, policies, farmers, risk*

Introduction

The two phenomenon's affect the insurance market negatively, with the consequences that insurance companies may not be willing to enter the market. In the case of agriculture with small farmers, insurance companies or banks consider there is a higher risk of moral hazard and adverse selection for three reasons.

First, since they are very small, it is more difficult and expensive both to obtain information and control whether the insured farmers adopt the appropriate behavior (does he use enough, less or not enough pesticide or fertilizers?) to reduce the occurrence of the risk insured. Second, as with banks dealing with many small credits, transaction costs are higher with small farmers because of the vast number of contracts

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with limited amount of money insured. In addition, with high geographic dispersion of clients in rural areas, the cost of differentiating between the legitimate and fraudulent loss is enormous. Combining those two constraints makes the final insurance costs more expensive for the farmer, in turn giving him a lower benefit. Considering this lower margin, there is a risk that “bad farmers” will be the first (if not the only ones) to take the insurance and that the good ones will either not take the insurance or take more risk in order to have a better profit.

Agriculture is riskier than other sectors

The question is why the agriculture insurance or credit riskier than other sectors of the economy. There are many risks, but some of the following are the most common:

Guarantee - Without entering into the details of different existing rural collaterals, very often small farmers simply cannot offer guarantee. Even if they own a property, the insurance company or bank could face legal frustration as property ownership is not clearly defined, and/or as there is strong opposition to the selling of the mortgaged land from the community, indirectly meaning there is no market for it. In some case, it will not only be impossible for the insurance company to foreclose on someone’s land or agricultural property but financial institutions might even be subjected to political pressures to reschedule or forgive agricultural debts (for example in USA).

Covariant risk - Dealing with small rural communities means that it is difficult to diversify your risk as small farmers are all living in the same and small region and producing similar things. Therefore, in case of a drought, storm, disease, the risk is high that they are all affected together at the same time (insurance the risk of loss of income for example in USA). The same will happen if commodity prices decline or with a natural disaster. In addition, farmers sometimes may collude collectively and claim, as a group, to be more severely affected than it is the case in the reality.

Cause damage and high insurance costs - If crop production is much lower than expected or cattle die, there is not necessarily a single reason for the damage to have happened and, therefore it is difficult to estimate whether it happened because of a natural hazard or mismanagement from the farmer. This difficulty is higher with small producers, as the microfinance institutions or the insurance company will not have the time to make a close follow up for each of them. Costs are not only higher because there are many contracts involving limited amount of money insured and the difficult assessment of why the damage happened but also because they have to manage a large quantity of small contracts, verify premium has been paid, send reminder if necessary, paying indemnities, answer questions etc. Therefore, the insurance company before entering into the development of this type of insurance, accurately analyze their tariffs on agricultural insurance, the costs of insurance and underwriting result.⁴

Portfolio of geographically dispersed crop insurance contracts can be as much

4 The technical result is the ratio between the settled claims and earned premiums, and he must always be positive. Can be calculated for each insured individual.

as 20 times more risky than an equally valued portfolio of health and automobile insurance contracts. The above mentioned constraints are not specific to insurance but to banks products in general and in rural areas especially, given the small size of the clients living close to one another. While it is possible for a banks to diversify its credit portfolio with a relatively small amount of loans, the situation is quite different with insurance, especially if dealing with rural insurances and small farmers. Because of concentration risks that are highly correlated in small rural areas, the bank giving insurance scheme will require a much higher capital adequacy. This higher capital is necessary in order for the financial institution to be able to reimburse small farmers in case the damage happens which, with high correlation risk, is likely to be very large. However, a higher capital also means a more expensive premium and, in a context of low profit sector (small farmers), may simply be impossible to pay for the poor households. The question is how to overcome this problem.

In theory, there are two ways of reducing those costs while ensuring a good level of diversification:

- Start with very big numbers of clients in different regions or continents. In practice, this solution is difficult, not to say impossible for the microfinance industry, which, by definition, is small.

- A second approach is the reinsurance market. This solution is good but is still expensive because the reinsurer doesn't know how to evaluate the risk on the short term, and for a reinsurance company, a portfolio of insurance is very small compared to what they are used to deal with. For those two reasons, the cost of reinsurance will still be high.

Different solutions to manage financial risks in agriculture

It is estimated that about 70% of the population of undeveloping countries live in rural areas compared to only 30% in developed countries. So far, banks are reaching 80 millions of clients out of an objective of 500 millions to one billion, most of the clients reached by banks live in urban areas and only few banks provide insurance products in their portfolio. Therefore, the probability of having access to banks products for small farmers is already low and even lower for access to insurance. Insurance could have good added value in rural areas but, with difficult access to it, farmers and, more generally people living in rural areas have found ways to cope with their specific needs. Methods may be old or recent, formal or informal, close to what we call insurance or not, invented by cooperatives or banks and may provide guarantee to the producer or the lender. The best example of this type of development of financial services, we have USD, where the insurance companies and banks combining old and new methods of service delivery, failed to meet the needs to cover the risks faced by rural households. A first informal insurance arrangement developed in USA and consists on household A to help household B with the opposite being expected later in case of necessity, reciprocal gift exchange are also a form of insurance, if we consider that the benefit expected can be received/given at the "appropriate" time. For people receiving their

earnings once or twice a year, they can insure themselves either by buying physical assets they don't really need in order to be able to sell them in case of necessity or, in case it is available simply by putting part of their money on a savings account which they will use later when needed. When feasible, small farmers may simply diversify their crops or have non farming revenues. What follows are not direct guarantees to small farmers but measures or institutions helping them in securing their revenues, or having easier access to the services provided by financial institutions.

But besides these informal guarantees must be provided and the actual funds to cover the risk in providing financial services in agriculture, and further analysis will focus on management of banking risks and risk insurance. In USA there are three possible formation system of guarantee funds in agriculture::

1. The first one consists on a direct guarantee covering the credit risk of the bank toward the borrower. The expected advantages of such a guarantee system (substitution of collaterals, lack of client's information for the bank is compensated, new type of market for the bank and additionally) were not met.
2. The second type is a guarantee of refinancing, covering the risk of bank refinancing a other bank. This sort of guarantee fund has proved to be efficient in helping finance small farmers or even families dealing with agriculture. Whether the guarantee fund gives its guarantee to the lender against the default of the bank or the final borrower, in most cases, the money of the guarantee fund comes from external sources.
3. The third system, "the mutual guarantee fund", will give to the lender a "group guarantee" and differs from the two first ones in the sense that the local community is financially directly involved for the default payments. In case of default payment from one of the borrower, either the community will pay back or the whole community will have no longer access to credit.

As already mentioned, mortgage exist and are being used by the lender as a good security. However, their effectiveness is reduced by two factors: the ownership is not always clearly defined and there might be strong opposition to the selling of the mortgaged land from the community. Therefore, unless some legal criteria are met, mortgage in the rural part of developing countries are relative. There is a high risk that small producers owning a few acres of land will lose their property, which will make them poorer than before for reasons that are independent of the work they provide: drought, disease, decrease of world price of commodities etc.

A well developed system of licensed public warehouse, like in USA, and the use of warehouse receipts for storage provide different advantages in the interest of both the agriculture in general and the farmer in particular. Among the advantages of a warehouse, we can mention that it provides a uniformed and well regulated system for the storage of grain, it is a good protection for the grain depositors (insuring the quality and quantity of the deposited grain) and it introduces the use of warehouse receipts, which are official documents for ownership and can be used as collaterals for short-

term loans, allowing the producer to sell his products at the most appropriate time. Successful examples of warehouse receipt system are numerous but it must be based in mind that a warehouse receipt has to be based on appropriate regulation that will enable a regulatory agency to control the key component of the system and that there should be no conflict of interest between the manager of the warehouse and the producers (for example if the manager has a direct interest in buying the products he stores at a low price). This technique offers lots of advantages both for the financial intermediaries (good collateral, liquidity of the warehouse receipt etc.) and for the producer (better price stability, access to short term credit etc) but, apart from the regulatory aspect mentioned, the technique cannot be used for products that cannot be stored and would be less interesting if prices are stable.

Credit bureaus, in many developing countries, with their respective advantages and disadvantages but basically, they all provide information about potential borrowers that are not available on the market. This information can be negative (people who pay with delay or don't reimburse) or positive, providing the bank with information such as other existing loans, collaterals, activities etc. In order to develop such a system, some preconditions must be fulfilled: the country must possess national identification numbers for all its citizens (identification number in Serbia), the centrals should be in competition and operate legally, which means that a working judiciary system must be in place and an effective system of private life protection should be in place and defined in the constitution.

In rural areas, analysis of the various outcomes and incomes shows that cycles are essentially yearly cycles but the principal income and outcome periods do not coincide. Therefore, the producer has to anticipate its costs and revenues on a yearly basis. The Management Team in Bank may help the producer in the global management of his farm and his cash flow in particular. Indirectly, the "Management Team in Bank" gives more security to credits given to farmers by preparing with them a yearly cash flow table showing when disbursements and revenues are likely to occur. On the other side, the "Management Team in Bank" may also have some added value by giving to farmers some general technical tools or by finding with them potential new cycles with different periods of financial outcomes and incomes.

Types of insurance in agriculture

In theory, among the different formal agricultural insurance scheme already existing, we should mention: price (revenue), livestock, crop - yield, rainfall or climate insurance. These types of insurances can be combined and used as collaterals by banks. In addition to those types of insurances, the reinsurance market can potentially be used by the banks or insurance companies to diversify their risk.

In practice like in USA, access to these insurances for small farmers will vary. Furthermore, without clear indication of what is insured and how it will be measured effectively and efficiently, these insurances can only play a limited role in reducing the agricultural risk for small farmers because they face the same problems that agriculture

credit faces with microfinance institutions: asymmetry of information, covariant risk, moral hazard, adverse selection etc.

However, although limitations do exist, the situation is not as negative as it may appear at first glance. On the one hand, with price insurance, information will be transparent and the risk of moral hazard will be low. On the other hand, with new insurance products and appropriate technology, strong complementarity between credit and insurance can be found. Defining index for the remaining crop, livestock and weather insurance, will reduce considerably moral hazard and adverse selection, covariant risk will be managed via the reinsurance market or new market instruments for sharing risk and, with new technologies such as satellite images, data will be measured more precisely at lower cost, reducing considerably the information asymmetry. Therefore, complementarity between insurance and credit scheme do exist and there is a potential for profitable insurances in rural areas. Whether these new insurance products can be used for insurance in rural areas will depend on the environment with preconditions conditions such as historical data and suitable technology available, appropriate institutional means to deliver such insurances, and a proper legal and regulatory for supervision of insurance companies.

Insurance earnings or the risk of price changes - The concept of this insurance is simple, if price falls during the period insured, the producers receives a payout equal to the difference between the price the producer chose to insure with the price risk management contract and the international market price on the last date of the option coverage. This insurance can be combined with rainfall and crop insurances and can be used as collateral for banks. However, in reality, small farmers often do not have access to such revenue insurance: the minimum size contract traded exceeds the annual production of individual small farmers, lack of knowledge from the farmer that this type of insurance actually exists and finally, the seller is often unwilling to start a business relation with small size producers characterized by high transaction costs.

Not many examples of *livestock insurance* in developing countries were found in the literature, probably because opportunity for fraud and abuse are very high. However, the example found was in Mongolia, country that suffered tremendous losses in recent winter disasters, with mortality rate of over 50%. The concept is based on an index insurance that would pay all herders in the same region the same indemnity payment, should the regional mortality rate be worse than expected. Therefore, the incentive for herders to work hard on saving his animals during severe weather is maintained but, at the same time, it is reinforced by the fact that herders will compete to have lower than average mortality rates. The fundamental reason why livestock insurance has been chosen instead of individual insurance comes precisely from the mentioned incentive to manage livestock losses carefully. In case the regional mortality rate is higher than the index, all herders, including those who have fewer losses than the average will receive indemnities.

Insurance yield in agriculture - Crop insurance is not an easy issue because there are different factors that will influence the final production. In addition, crop risks are correlated and risks of moral hazard already high in agriculture are even higher with

small farmers. In order to reduce moral hazard in undeveloped countries, between 30 to 70% of the crop insurance premium is subsidized. But, on the one hand, developing countries can't afford such subsidy and, on the other, risk that small producers don't work enough if they consider to be well insured is high because, given dispersion of farmers in rural area, the capacity of control from the insurance is difficult, not to say inexistent. Area yield index is a good alternative to secure the farmers' revenue while avoiding the above mentioned difficulties. It consists on paying indemnity when the average area yield falls below a predetermined entry. The area should be large enough to avoid collusion and is generally the size of a county. Area yield index does not only avoid moral hazard, adverse selection and high administrative costs but it encourages individual farmers to have a higher production than the area yield average. In case the area index falls below the established threshold, the given farmer will not only benefit from the indemnity but also from the high price of his products. However, before starting such an insurance scheme, two conditions must be fulfilled. First, there must be some historic yield data available and second, the area yield index has to be measured by an independent individual. In some case, one or both conditions might be difficult to implement and to overcome such problems, weather index, which offers at the same time data that are easy to verify and historical data easy to find, could be considered as a solution.

Crop Insurance of rainfall - The key issue with weather index insurance is to have a strong correlation between the index (the rainfall) and the output expected (the harvest). Assuming that the rainfall is below an established amount and that the above-mentioned correlation is high, the compensation will be calculated accordingly. Weather insurance have at least three advantages on crop insurance, first the market is not only open to farmers but to a larger population for whom weather has an impact on their activity, second if there is a slight deviation from the agreed index, then the risk of moral hazard is strongly reduced (rainfall does not depend on the client) and third the administrative costs will also be lower.

However, weather index insurances have their limitation. First, as microclimate exist, some farmers insured with a rainfall index may lose due to a drought at a micro-location, but not receive indemnity if the measured rainfall at the regional weather stations remains above the amount. The opposite situation could also happen: farmer is paid, due to the measures at the weather stations, although he has not suffered any losses. Second, similar situation could occur if the correlation between the index and the outcome is not elevated and not well estimated. Third, weather index insurance cannot avoid completely fraud with, for instance, people trying to modify data measured with ground instruments. Fourth, the intention of such insurance is to give more stable purchasing power to farmers. But if they are not all covered, in case of drought, the ones insured will have a purchasing power allowing them to pay the normal price for the basic products (in short supply) while the ones not insured will simply not be capable of buying the basic products they need. Therefore, should the rainfall insurance not have been accessible to any farmer, the short supply of basic products would have been more equally distributed. In conclusion, it seems that the general advantages of index based

insurance products outweigh by far these risks. What is certain is that weather index insurance will work very well in case of massive droughts or floods, when moral hazard problems are insignificant and fraud irrelevant. In addition, there is a promising role for technology in providing the needed information at low cost with methods such as: satellite images, weather data from traditional ground instruments, weather data from new system, sampling from grasslands to determine nutrient content.

Reinsurance in agriculture

The principle of reinsurance is that correlated risks at local level become independent at a global level. Therefore, the reinsurance market could be appropriate for rural insurance that cannot start very small and slowly scale -up village by village. However, reinsurance has also some limitations:

- there is no price transparency because it is typically a market where there are few buyers and sellers,
- the asymmetry of information between the buyers (knows much more) and the seller is high
- the reinsurer will ask a high reinsurance premium

Insurance in region

According to estimates insurance companies, the percentage of farmers in Serbia to ensure the property is approximately 10 percent, while the Serbian Republic, where the damage this year, perhaps the largest, the number is even lower - only about 2.5 percent. Is insufficient and those with basic insurance and pay property insurance flood: according to some data in Serbia just over one percent of farms in Croatia, about six percent, while the number of policies in Bosnia to ensure agriculture for damages inflicted by floods negligible - only a few tenth of the polis. As from year to year storms are becoming more frequent and higher risk to crops, animals and machinery, almost all governments in the region have sought to stimulate the farmers by providing subsidies for this type of security. Annual property insurance premium farm depends on the evaluation of insurance companies and property worth 50,000 euro's in Serbia, the average annual insurance cost 120 euro's, if it comes to areas prone to flooding, this supplement can be five times higher. The Serbian Republic of hectares cultivated land insurance costs about 30 euro's, while acres of land with apple trees should be set aside 1,000 euro's per year. Damages arising in these areas can be several times larger. Apparently farmers in the former Yugoslavia did not know that the floods last year became the first to top the list, even among the 133 natural disasters - after the floods following storms, earthquakes, droughts and fires. This means that in these countries, the percentage of insured farms difficult to reach the level of France where he secured 77 percent of them or Austria, where this figure is 90 percent. It seems that the only chance that the level of insured agricultural land is higher, and thus to avoid the negative

consequences not only for farmers but also for the entire economy of the country, that this type of insurance becomes mandatory, as proposed by some insurance companies in Serbia.

Conclusion

We can conclude that there is a gap between the possibility of insurance companies in respect of insurance in agriculture on the one hand and the need for insurance by farmers. Although the insurance market and credit for farming, has great potential for profit, insurance companies and even more improved life insurance products, and banks are more focused on other industries. What is an obstacle in the development of financial services for farmers, are risks that cannot be defined and accurately measured, but the lack of legislation to encourage their development, especially in developing countries. Covariant risk must be addressed, and if available, it should be dealt with instrument such as reinsurance market.

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