



# ACPC Monitor

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## HOW WILL FARMERS' BORROWING RESPOND TO AN INCREASE IN THE CROP INSURANCE PREMIUM? THE CREDIT DEMAND OF SMALL RICE FARMERS IN THE PHILIPPINES <sup>1</sup>

### Background

Crop farming is a risky activity. As the agricultural sector hosts the bulk of the country's poor, protection of small farmers from agricultural risk is a special concern in rural poverty alleviation. One instrument to offset risk in agriculture is crop insurance, which provides an indemnity to a farmer in the event of crop loss. The price of insurance is the premium, typically collected at the start of the cropping season.

The Philippine Crop Insurance Corporation (PCIC) is the only institution, which implements the country's crop insurance program. Crop loans extended by government financial institutions (GFIs) were mandated to fall under insurance coverage, with the cost of insurance being subsidized. Recently though, weak financing of the subsidy has led to serious doubts concerning the sustainability of the scheme.

One proposal to address the problem is to raise the farmer's premium. As most crop insurance is extended in the form of mandatory cover of uncollateralized crop loans from GFIs, such a step would raise the price of production credit provided by the government. Given that GFI lending programs are the sole source of formal finance for most of the country's small farmers, a premium adjustment would have to be carefully evaluated in terms of its impact on credit demand.

Several related studies in the past have shown that even if prevailing formal interest rates are increased, the resulting cost of formal credit would still be lower than that of informal credit. This has led to the view that demand for formal credit is therefore inelastic to the insurance premium. Nonetheless, it has been observed that defending the application of high rates is politically odious. Hence,

premium rates, among others, have again been oriented towards subsidizing the farmers' share beginning 1998 (see Table 1).

**Table 1. National premium rates for crop insurance (as percentage of amount covered), 1991-1999**

Year	Farmer	Govt. Subsidy	Total
1991	2.93	7.30	12.23
1992	5.00	5.23	12.23
1993	5.00	5.23	12.23
1994	5.00	5.23	12.23
1995	6.52	3.29	11.81
1996	6.52	3.29	11.81
1997	6.52	3.29	11.81
1998	2.91	4.24	9.15
1999	2.91	4.24	9.15
2000	2.91	5.90	10.81

Source: PCIC

These circumstances clearly underscore the need for better information on how to approach this issue. Consequently, a study was commissioned by the Agricultural Credit Policy Council for a quantitative investigation on the effect of the crop insurance premium on demand for production credit. The study established a theoretical framework that organizes and presents the evidence in the form of a regression equation. The framework takes into account the possibility that farmers choose not only between formal and informal sources of financing for working capital requirements, but the possibility that they might also opt for self-finance. Data for

<sup>1</sup> Drawn from a paper prepared by Dr. Roehlano Briones for ACPC. Dr. Briones is Assistant Professor at the Ateneo de Manila University and consultant, UPEcon Foundation.

the study was gathered from a small purposive sample of participants in government lending programs. This paper summarizes the findings of the investigation.

### Summary of findings

To control for farmer characteristics, regression analysis based on the formal model was conducted to isolate the impact of the cost of credit on formal borrowing. The following results were obtained (see Table 2).

**Table 2. Tobit regression of credit demand with geographic dummy variables**

Number of observations: 96	Dependent variable: DEBTH *		Dependent variable: DEBTH *	
	By region		By island group	
	Coefficient	t-value	Coefficient	t-value
RIN	-4.168*	-1.81	-4.777**	-2.06
QOUT	-5.325***	-2.80	-5.791***	-3.01
LANDV	0.218**	2.37	0.254***	2.83
TENANT	4.045***	2.27	4.873***	2.83
FMAST	-0.150**	-0.78	-0.164	-0.84
YRDEBT	-2.817**	-2.12	-2.664**	-2.10
LUZ	-		5.479***	3.04
VI	-		4.777***	2.79
MINDA	-		4.409***	2.62
Constant	21.252	1.49	17.593	1.20
Pr(Chi <sup>2</sup> >critical)	0.00		0.00	0.00

\* DEBTH - crop loans per ha., per cropping (as of 2000)

1. The formal cost of credit, inclusive of the insurance premium, has a consistently negative and statistically significant effect on borrowing. This implies that a reduction in the formal cost of credit results not so much in farmers shifting to informal credit, but rather in an increased reliance on internal funds.
2. The final regression yields an elasticity estimate of  $-4.8$ , i.e. a 1% increase in the formal cost of credit reduces credit demand by 4.8%. Based on an average share of the premium in formal credit cost, this translates to an elasticity of  $-0.9$  for the insurance premium. That is, a 1% increase in the premium would result in a 0.9% decrease in credit demand.

Specifically, based on this table, variables that significantly affect demand for credit (DEBTH) are:

- **Cost of formal credit (RIN):** The average response to a one percent increase in the total interest rate of formal credit is a  $-4.8$  percent drop in formal borrowing, all other variables held constant. This figure is calculated for farmers who are cooperative members (and may borrow from either formal or informal sources), with all other variables held constant.
- **Interest rate of informal credit (QOUT):** On average, a one percent increase in the interest rate of informal credit would reduce borrowing by 5.79 percent. This figure is calculated only for farmers who are not cooperative members (and must therefore borrow from informal sources), with all other variables held constant.
- **Value of owned land (LANDV):** On average, a one percent increase in the value of owned land will increase borrowing by approximately 0.25 percent, all other variables held constant.
- **Proportion of farm land under share tenancy (TENANT):** On average, a one percent increase in the proportion of land under share tenancy will increase borrowing by 4.87 percent all other variables held constant.
- **Value of farm assets (FMAST):** On average, a one percent increase in the value of farm assets will increase borrowing by approximately 0.16 percent, all other variables held constant.
- **Years of borrowing from a cooperative (YRDEBT):** On average, every one percent increase in the number of years for which the farmer has borrowed from a cooperative reduces the size of borrowing by 2.67 percent. This is calculated holding other variables constant.

This finding is robust even to alternative specifications, including subsample regressions, censored/truncated regressions, interest rate interactions, and regressions with location. There is also no evidence that small farmers respond more to an increase in the premium or formal cost of credit compared to the average farmer.

The regression results suggest that a possible scenario is as follows: suppose the loan per ha. is P12,000 per cropping, and the insurance premium is 360 pesos per ha. per cropping. Then a mere ten peso per ha. increase in the insurance premium would be expected to reduce the loan per ha. by 30 pesos.

The results, in other words, contradict with the hypothesis that farmers' credit demand is inelastic to the interest rate. The study's framework points to the potentially elastic response due to greater reliance on internal funds.

## Conclusions and Recommendations

The study's scope constrains it from generating clear-cut recommendations for premium setting. Nevertheless, the results clearly present worrisome repercussions for the welfare and vulnerability of small farmers if and when premium rates are adjusted.

For instance, consider the costs of a premium increase: the immediate consequence would be an income reduction for farmers being served by the government's cooperative lending program. The cost of working capital rises for farmers who continue to avail of cooperative loans, or consequently turn to informal credit sources. Moreover, output may fall as the farmers cut back on the application of inputs financed by working capital (e.g. chemical inputs). Hence, net farm income is squeezed by rising costs and declining revenue.

Another impact to consider is the increased use of household savings to finance farm production. These funds may serve as a buffer against possible wealth shocks. Hence, a reduction in savings increases the vulnerability of a household to these shocks. Food security may suffer, or a household may be less equipped to cope with natural

calamities, and medical emergencies. These funds may also be intended to contribute to some lumpy future investment (e.g. education of children, the acquisition of farm assets, such as a carabao, or the purchase of a consumer durable, such as housing improvement). Hence, a reduction in savings may delay these investments, or eliminate them altogether. Such an impact is necessarily dynamic: the savings reduction may push the farm household down to a lower trajectory of capital accumulation. At the extreme, the drawing down of household funds may even push the household over the brink, and into a "poverty trap", i.e. a vicious cycle of resource deprivation and weakening productivity.

On the other hand, consider the benefits of eliminating government subsidies on the insurance premium: resources will be freed for other poverty alleviation schemes. There can be little doubt that subsidized insurance within a cooperative lending program does assist some poor farmers; the question is, can similar assistance be rendered at lower cost by some alternative scheme? For example, the subsidy can be used for irrigation development. Some of the questions to be asked of public spending programs include: how much benefit is received by beneficiaries? Of these benefits, how much actually goes to the poor, and how much "leaks" to the nonpoor.

In providing us with a benchmark estimate for assessing the repercussions of premium adjustment on smallholder borrowing, the study lays a basis for exercising greater prudence in making adjustment/s in the premium rate.

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