Improving the effectiveness and acceptability of the Federal crop insurance program
by Dana H Myrick

A Thesis Submitted to the Graduate Faculty in Partial Fulfillment of the Requirements for the Degree of DOCTOR OF PHILOSOPHY in Agricultural Economics
Montana State University

Abstract:
The Federal Crop Insurance Corporation is a government-operated business-like firm, born in 1938 after 16 years of Congressional debate and research. The FCIC offers an insurance service under contracts purchased, voluntarily by farmers. It is obligated to charge premiums that will cover loss indemnities paid under the contracts over some period of years.

The Corporation is akin to private insurance firms in several ways': The FCIC must develop a sound actuarial system. It must define insurance groups, build high participation, avoid adverse selectivity, and employ the tools of underwriting and merit rating to achieve the purpose for which the Federal Crop Insurance Act was initially designed. It is entrusted with the management of accumulated reserves.

Drouth is the most important peril covered. Precipitation records indicate that an actuarial period of at least 20 years is required for a sound rating program covering the major crops. Since the Federal crop insurance program was placed on an experimental basis In 1947, it has not yet completed one actuarial period, even on wheat, the first crop insured. Whereas the drouth peril does not occur randomly from year to year, even over large geographic areas, annual and even ten-year loss ratios of individuals, counties and states are not representative of their longterm loss expectancies based on a "complete" weather cycle.

The Federal crop insurance program must cope with the problems of insurance imperfections, such as lack of homogeneity among insured, and non-random effects on losses (such as differences in management, farm size, and soils). The FCIC has developed size and experience-credit formulas to take account of these non-random differences between insureds. Consideration should be given to the reformulation of experience and size credits to accomplish merit-rating purposes. An improved merit-rating system could make possible the use of larger rate areas, defined by pronounced topographic and geological differences. Methods will need to be devised for rating large units as the program is adjusted to the major trend toward larger and fewer farms.

A new federal farm program, beginning in 1964, provides participating farmers with part of the function of crop insurance, by guaranteeing an income regardless of crop yields through its certificate plan. This program will have an effect on the participation in the Federal crop insurance program and upon its actuarial data.

Attention is called to the relatively short history of the crop insurance program, to the social investment (including a public financial investment of $200,000,000), and to the progress the FCIC has made toward achieving its goal. Further attention is called to the disturbance to insureds and farmers caused by conflicts between agencies, and by annual changes in program policy.

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ABSTRACT

The Federal Crop Insurance Corporation is a government-operated business-like firm, born in 1938 after 16 years of Congressional debate and research. The FCIC offers an insurance service under contracts purchased voluntarily by farmers. It is obligated to charge premiums that will cover loss indemnities paid under the contracts over some period of years.

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Attention is called to the relatively short history of the crop insurance program, to the social investment (including a public financial investment of $200,000,000), and to the progress the FCIC has made toward achieving its goal. Further attention is called to the disturbance to insureds and farmers caused by conflicts between agencies, and by annual changes in program policy.

CHAPTER I

INTRODUCTION

The Problem

The Federal Crop Insurance Corporation celebrated its Twenty-Fifth Anniversary in 1964. The program was conceived in the agricultural stress of the 1920's and born amidst the agricultural crisis of the 1930's. There are differing opinions as to who or what was the father, from whence came the urge, and why the nurses have so desperately worked to keep the baby alive. There have been those who sincerely believed that crop insurance was a response to the demand of the farmers. Others would argue, just as sincerely, that it was a part of the plans of the Administration to meet the emergency needs of agriculture--a supplement to or substitute for relief measures. There are undoubtedly those who now feel that it is just another government bureau which desperately strives to perpetuate itself.

Twenty-five years of experience should provide a base from which the program may be viewed with a better chance of gaining some perspective of its accomplishments, its problems, and future plans for meeting its problems and attaining its objectives. Three stages in the Federal crop insurance program are now discernable:

Stage One is characterized by the trials and errors of an experimental model. It incorporated from previous models whatever appeared to have been acceptable features. The rest of the model was conceived on the drawing board, based on theory combined with results of experiments on various parts. More specifically, the crop insurance program made use of research studies and the experience of private insurance companies. One reason the private experiments failed was because they included price protection, a feature which was avoided in the government program. They also failed because of lack of capital, and because it was not feasible to base premiums on a sufficiently long actuarial period. This, more than anything else, was responsible for the private support of the governmental experiment, which could incorporate sufficient capital and provide the opportunity to carry out experiments over a long period. The specifications for the new experimental model called for features relating to goals other than insurance. Emergency relief, and price and income instability were major concerns of the administration. Thus, commodity storage and political pressures influenced the design of the first program. Stage One included the shake-down tests of the new model, characterized by some narrow escapes, and finally an almost disastrous crash, when Congress failed to appropriate funds for continuation of the program in 1943. An overall view of Stage One reminds one of wartime production, where the emergency situation precludes the setting up of a well-planned experimental program, and forces production before the model is properly tested. It is pointed out in Chapter 3 that one of the early mistakes in developing the Federal crop insurance program was that, whereas the intention was to go slowly and experiment with one crop at a time, political pressures dictated otherwise.

Stage Two began with the revival of the crop insurance program on a planned experimental basis in 1947, when the program was set up on a planned-growth projection, and experienced insurance personnel were enlisted in the development and administration of the program. Sales development was finally given a prominent place in the plans.

Stage Three of the Federal crop insurance program begins with what some individuals hope is the launching of the second twenty-five years of all-risk crop insurance. This stage will be affected by the impact of the rapidly changing agricultural situation in the United States. The average size of farms is rapidly increasing, resulting in a rapidly decreasing political power of agriculture. Just as important is the rapid shift from labor to capital in all of agriculture. There is also the effect of some pertinent changes in other Federal agricultural programs, which directly affect Federal crop insurance. The growing emphasis of the Administration on budget economy will have its impact on the future of the program, forcing it to justify more forcefully than ever its existence and continuation.

This latter situation is the problem for the FCIC. Up to this point in the Federal crop insurance history, Congress has judged that the marginal returns from public money invested in crop insurance are comparable to the returns from the funds if invested elsewhere. As the whole structure of governmental expenditures is reviewed, all programs will be reexamined in the light of their accomplishments, and the possibilities of upgrading their operations--to increase their marginal returns per dollar invested. Some measures that will likely be used in the evaluation of the crop insurance program include the degree of participation in the program, administrative costs (now borne by the government) relative to total premiums, and need. Evaluation of the need would include an estimate of costs directly to the government and to society, of any effect which the absence of the program would have on production efficiency. The possibility of shifting administrative costs from the government to the FCIC would likely be explored. It is a matter of record that supporters of the original crop insurance act hoped that some day the program could be transferred to private insurance companies. This, too, may be explored. In October of 1964, at the annual convention of the National Association of Mutual Insurance Companies at Denver, the Crop Insurance Research Bureau was formed, "to tell the truth" about the FCIC. Max D. Rutledge, president of Farmers Mutual Hail of DesMoines, and head of the Bureau said that

> It is our intent to publicly challenge statements made by FCIC regarding its original purposes, its future intentions, its financial reports, its administration, its sales methods, its list of supporters, and its effect on the insurance business. 1/

Don W. Montgomery, outgoing president of the NAMIC, while he deplored the FCIC as a prime example of "government escalation," indicated that cooperation between government and private companies might be acceptable.

1/ Damman, George H., reporter, "NAMIC Concerned About Government Insurance Growth," The National Underwriter, October 23, 1964, page 1.

> But we also have other examples of what I believe constitutes a proper and effective relationship, such as the emerging pattern of business and government cooperation for special perils in such as atomic power coverage and foreign credit insurance. 2/

If these individuals are sincerely interested in public service, it follows that they would consider an alternative to Federal crop insurance, such as some cooperative arrangement with the government to provide all-risk crop insurance.

The Research Problem

The research problem is to attempt to find answers to the question: "What variations in the all-risk insurance program would increase its effectiveness and acceptability as a program and make it more nearly meet the needs of farmers?" The research will be concentrated on the program in Montana, with the assumption that solutions to the Montana problem will have some application to the total program for the United States.

Contemporary studies in other states are analyzing farmers' attitudes about insurance and other risk-bearing devices. A survey by the Economic Research Service, USDA, has analyzed the impact of the Federal crop insurance program in two areas, one in Virginia and one in Montana, where large indemnities were paid on the 1963 crop.

This study will reappraise the Federal crop insurance program in relation to the intended objectives and principles underlying insurance in general and crop insurance specifically. The objectives of the crop insurance program are stated in the implementing statutes. The question is, are the objectives still consistent with the needs of the farmers for protection and does the program meet the objectives?

The FCIC feels a need to expand its operations into new areas, to new crops, and expecially among more farmers. Expansion requires a study of coverage adequacy and rates, special area problems, and farmers needs.

2/ _Ibid._, p. 1.

There is the large general question of fitting the program into the changing agricultural situation. What new needs for crop insurance are being created, and what old needs are disappearing? How will changes in agricultural programs affect the needs for crop insurance? How can all-risk crop insurance be better integrated with other agricultural programs? It will be pointed out in subsequent chapters that crop insurance is no different from other insurance programs in that sound actuarial work must be based upon past experience, yet must project substantially into the future, depending upon the nature of the risks insured. Furthermore, in a dynamic society, all insurance must be adaptable to change.

Hypothesis

The hypothesis is that there are improvements that can be made in the crop insurance program which will make it more acceptable to farmers, and allow it to better accomplish the objectives for which the program was originally designed. It is expected that methods can be found which will better recognize the differences between insureds which are due to non-random characteristics such as management, size of farm, and soil differences. It is expected that methods can be found whereby crop insurances can be extended into crops and situations where it is not now available by making more use of known insuring devices. The present crop insurance administration can be expected to continue to expand its services and justify its existence only if it can continue to improve its administrative efficiency and its status as an insurance institution.

Procedure

The chapter on background theory and concepts provide a review of risk theory and the theory of insurance. Insurance is compared with other means of shifting the burden of uncertainty. Crop insurance in particular is compared with other insurance, bringing out the unique characteristics of the former with an analysis of perils and insurance requirements.

A search of the Congressional Record provides some answers to the question of what the Federal crop insurance program was intended to do, as revealed by the debates, testimony, and research results presented during the 16-year Congressional gestation period that gave birth to the final act.

Major concerns of insurance institutions are the proportion of participation relative to the insurable population and the continuity of participation. Generally, an insurance institution finds itself in a decreasing-cost situation, such that added participation (ignoring sales cost) tends to decrease cost per unit of premium volume. Further, an increasing proportion of participation tends to improve the actuarial accuracy. Based on these assumptions, an analysis of participation in the Federal crop insurance program provides an indication of the program's success.

Frequent reference has been made during the history of crop insurance to over-insurance and restriction of coverage to "investment in the crop." Also a concern was frequently expressed regarding the adequacy of coverage provided under all-risk insurance programs. Comparisons of available coverage with costs of production provide answers to the question of adequacy and over-insurance.

The problem of establishing appropriate premium levels can be solved only by continuous research covering loss-causing perils and the characteristics of insured units. This study is concerned mainly with an analysis of the perils, particularly drouth, and the variability among insureds, as these factors affect the probability of indemnity payment, or actuarial work of the FCIC.

Merit rating, or recognition of individual differences between insureds, is a rating tool that can be used to take account of non-random factors affecting crop-loss probability. A study of its use in the crop insurance program reveals how merit rating might be used to better advantage in the development of the program.

The changes that have occurred in agriculture since the birth of the crop insurance act, and especially since the program was put on an experimental basis in 1947, have a critical impact on its mission and justification for continuance. Of particular importance is the impact of other Federal programs which tend to assume some of the insurance function. An analysis of the impact of the changing American agricultural industry and programs should aid in adjusting the crop insurance program to the changes that have occurred and those to be expected.

The future of all-risk insurance may depend upon changes in the insurance institution itself. Alternative organization structures should be contemplated as possible means of better accomplishing the objectives of crop insurance as it fits into the future political and economic framework of the country.

Whether or not to buy insurance is only one of many economic choices with which farmers are faced. The decision-making processes of managers provide the basis for a lengthy dissertation in itself. But this study would not be complete without at least a brief look at decision theory as it might apply to all-risk crop insurance.

The summary reviews the most plausible ways in which variations in the all-risk insurance program would increase its effectiveness and acceptability as a program and make it more nearly meet the needs of farmers.