

## AN APPROACH TO STUDY THE VIABILITY OF AGRICULTURAL FINANCING INTERVENTION SCHEMES

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### ABSTRACT

The assessment survey of farmers carried out during the year 2003 by the National Sample Survey Organization of India, revealed that more than half of the Indian farmers were in debt. Surinder Jodhka in a study on farmer's suicides highlighted the decadal changes in financing policy and agrarian situation and held it responsible for the suicide of the farming community. In this context present study is an attempt to evaluate the available literature and propose a comprehensive model for the evaluation of financing intervention schemes in general and agricultural financing schemes in particular. The paper evaluated existing models of scheme evaluation and identified their inefficiency and their limited scope in evaluation methods. The paper put forth its noble contribution in the sense that it considers both latent and precedent factors of scheme for evaluation. An attempt has been made to involve all the dimensions of a financing intervention scheme through qualitative and quantitative dimensions, so as to prevent the ill effects that include suicide and scheme failure as evident in case of farming. Further the model explores other dimensions that include individual beneficiary, concerned scheme and the targeted field (Agricultural financing in this case). The foregoing review evaluation put forth the model to evaluate the financing schemes and individual credit propensity to promote the aimed objective of inclusive growth.

**KEYWORDS:** Agricultural Credit Financing, Locus of Control, Risk Behavior

### INTRODUCTION

Credit financing is one of the critical inputs for agricultural development. It capitalizes farmers to undertake new investments and/or adopt new technologies. The importance of agricultural credit is further reinforced by the unique role of Indian agriculture in the macroeconomic framework along with its significant role in poverty alleviation, (Anjani Kumar, 2010). Realizing the importance of agricultural credit in fostering agricultural growth and development a large number of formal institutional agencies like Co-operatives, Regional Rural Banks (RRBs), Scheduled Commercial Banks (SCBs), Non-Banking Financial Institutions (NBFIs), and Self-help Groups (SHGs), etc. are involved in meeting the short- and long-term needs of the farmers. Several initiatives have been taken to strengthen the institutional mechanism of rural credit system. The major milestones in improving the rural credit are acceptance of Rural Credit Survey Committee Report (1954), nationalization of major commercial banks (1969 & 1980), establishment of National Bank for Agriculture and Rural Development (NABARD) (1982) and the financial sector reforms (1991 onwards), Special Agricultural Credit Plan (1994-95), launching of Kisan Credit Cards (KCCs) (1998-99), Doubling Agricultural Credit Plan within three years (2004), Agricultural Debt Waiver and Debt Relief Scheme (2008). These initiatives had a positive impact on the flow of

agricultural credit. However, inadequacy of the credit evaluation of agricultural schemes and policies is among the prime concern in India. As government agencies have partnered with researchers to create guidelines and methods for evaluating the validity of claims for intervention effectiveness, which leads to achieve scheme and policy objectives and prevention of adverse outcomes like suicide and scheme failure (Jacinta Hawgood, Allison Milner & Diego De Leo, 2010).

The effectiveness and efficiency of these schemes and policies depends on proper need identification by policy makers and adoption by target farmers (Supe & Ganorkar 1990). As policymaking in consultation with psychological factors about target groups leads to much efficient and stable policies and schemes (National Press Review president of the US 2009). Therefore behavioral economists implement these ideas and examine them through a psychological lens, which often shifts the focus to how important the effects of human behavior is in managing their finances for their families, (Tommy Garling 2010). Hence the psychology of planning, or the lack thereof, is an important topic in financing for both theoretical and applied reasons for the tendency of individuals to underestimate their future needs, in terms of financial resources (Mullainathan, 2004). As psychological and behavioral parameters affect farm management and production, (A. Bakhshi Jahromi and Gh. H. Zamani 2007), it is well recognized by agricultural economists that psychological and socio cultural variables may also impact on farmers' decision making, behavior and effectiveness (Sing and Rav, 1980; Salman and Davis-Brown, 1986; Fishbin and Ajzan, 1975; Bentler and Speckart, 1979; Goursuch and ortburg, 1983; Locke et., al; 1978). So, Edinburg studied decesion making on farms which brought together agricultural economics, modelers and psychologists in an effort to understand and model the interaction between personological and observed farmer behaviour.

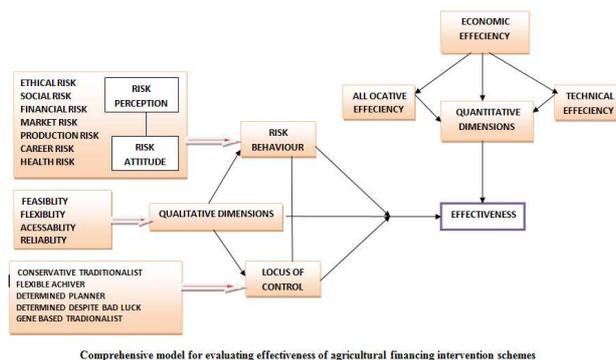
## **REVIEW OF EXISTING MODELS FOR AGRICULTURAL FINANCING INTERVENTION SCHEMES**

A good number of models have been developed in the past to measure the efficiency of financing interventions and cooperatives. Altman (1968), Gupta (1983), and Panigrahi and Mishra (1993) have developed models based on financial ratios. But, as the behavior of ratios varies from sector to sector and from industry to industry, the applicability of models thus arrived at cannot be generalized. Sriram (1991) has developed a model by applying multiple discriminate analysis using ratio indicators as base to discriminate between sick and healthy cooperatives. Sidhu and Sidhu (1990) measured success or failure on the basis of membership, loan per borrower member, owned capital per member, percentage of owned capital to total loan, percentage of over dues to loan outstanding, income per member, and profit/loss per member. The study is silent on the basis on which these variables were selected. Desai and Namboodiri (1991) have done an evaluation of farmers' service societies at all-India level using seven variables. While these factors may be appropriate for a comparative study at the macro level, a different set of criteria may have to be used for a micro level study. A study on evaluation mechanism for impact of schemes on members was conducted by Reddy (1992). The variables used in this study were: membership and member-users, volume of business, class wise loan, recovery of loans, and cost of management. However, the study itself cautions that adequacy of these indicators varies from region to region based on socio-economic factors. Suresh and Vinaikumar (1993) studied the economic viability of interventions using positive net worth as the criterion. Loans, cash balance, deposits, investments, consumption loan, recovery of loans, borrowing members, and non-credit business are the significant variables which influence the performance of societies. Meanwhile, evaluation and effectiveness studies focus on comparing the direct outcomes of an intervention with the planned objective, (Bull, R. 2005).

The evaluation methods in above discussion are defective in one or the other aspect of development. Hence, these models are not fully relevant in the context of scheme evaluation. Therefore, it is necessary to develop a method which can incorporate all the dimensions of development to measure efficiency and effectiveness. Hence, an attempt has been made in this paper to develop a comprehensive model based on all the concerned policy dimensions, as in agriculture a person’s behavior is dependent upon a complex group of structural and social psychological variables, (Pamela Dee Elkind, 2008).

**THE PROPOSED MODEL**

In the light of the discussion in preceding paragraphs, in which the deficiencies of the existing model has been highlighted, the new model is proposed as below;



**Figure 1**

The proposed comprehensive model in the light of above discussion explores the role of individual to be considered in policy formulation. To move in this direction the available literature put forth the behavioral dimensions to be considered in policy formulation and evaluation for the development of viable and sustainable financing schemes. These dimensions include:

- **Risk Behavior**
- **Locus of Control (LOC)**
- **Qualitative Dimensions**
- **Quantitative Dimensions**

**Risk Behavior**

The psychometric paradigm encompasses a theoretical framework which assumes that risk is subjectively defined by individuals who may be influenced by a wide array of psychological, social, institutional factors and their interrelationships. Risk is a central issue that affects many different aspects of people’s livelihoods in the developing world. Although farmers in developing countries are generally thought to be risk averse, little is known about the actual form of their risk preferences & its consideration in policy formulation (Alan de Brauw, Patrick Eozenou, 2011). As in rural area, risk is present in all management decisions including agricultural systems, as a result of price, yield and resource uncertainty. The existence of such risks has been found to alter household behavior in ways that at first glance seem suboptimal. Indeed, farmers take their decisions in a risky environment so that the consequences of these decisions are often not known with certainty until long after those decisions occur. As a result, outcomes may be better or worse than

expected. In the empirical literature, many researchers have found that risks cause farmers to be less willing to undertake activities and investments that have higher expected outcomes, but carry with them risks of failure (Adebusuyi, 2004, Alderman, 2008). There is a substantial body of evidence that supports risk response in agriculture and its relevance to economic decisions, (Euphrasie Ben, 2010). Flaten et al. (2005) conducted a survey among Norwegian farmers about their risk perceptions and provided a fairly good overview of the relevant risk sources and risk attitudes, both among farmers in general and Norwegian farmers in particular. Henceforth the inclination of farmers to take risks influences the aggregate supply of agricultural products, innovation in the sector, the financial structure of farms and the marketing decisions of farmers. The importance of the variable "propensity for risk" in the context of agricultural financing schemes makes the issue of assessing its level quite topical, (T. Georgieva, 2011). There are legitimate, value-laden issues underlying the multiple dimensions of public risk perceptions, and these values need to be considered in risk policy decisions (Slovic, 2001, p. 21; Tucker and Napier, 2001). In this regard, Cowell and Schokkaert (2001, p. 946) argued that 'neglecting the risk component would be potentially a misleading simplification'.

The effect of farmers risk attitudes and personality types on production and decision making have been an ongoing concern for agricultural economists (Pei Xu, et, al 2005). As lower levels of risk attitude (risk averse) towards debt were found responsible for farmer suicide and scheme failure (Jacinta Hawgood, Allison Milner & Diego De Leo, 2010). There are also some differences in producers' willingness to take risk, especially in finance area (Pei Xu, Corinne Alexander, 2005) regarding which policymakers should use risk analysis to address both the primary objects of policy interventions and their secondary adverse consequences (Henry Rothstein and John Downer, 2012). Pidgeon (1998) contends also that 'careful assessments of risk are necessary conditions for guiding policy decisions. Sjoberg (1998) states that 'risk perception is studied largely because it is believed that perceived risk is a clue to policy demands as perceived risk has consequences for action'. Therefore if risk is excluded from the livelihoods analysis, then findings and policy recommendations would be misleading and ultimate decisions on identification of relevant improvements and intervention measures might be inappropriate. (Belaineh Legesse et; al, 2007). Substantial evidence suggests that attitude is the driving force for risk perceptions, rather than the converse (Sjoberg, 1980, 2003). So, if one is to approach and begin to understand risk response in terms of an individual's behavioral response to risk, it seems relevant to study attitudes that are linked to specific sources of risk, as those attitudes will influence the way that we as individuals manage these risks (Robison et al., 1984; Hardaker et al., 1997).

On these basis results obtained from informal and the questionnaire surveys, following major sources of agricultural risks were identified and classified. These were: (1) production risk, (2) human (health) risk, (3) institution-related risk, (4) ethical risk, (5) financial risk, (6) social risk, (7) market risk and (8) career risk. (Belaineh Legesse et; al, (2007), weber, (2002), Huirne and Hardaker (2001). Sjoberg (1998) states that 'risk perception should studied largely because it is believed that perceived risk is a clue to policy demands as perceived risk has consequences for action'. Pidgeon (1998) contends also that 'careful assessments of risk are necessary conditions for guiding policy decisions'. This requires a thorough and continuous monitoring of how households and communities perceive risk in their own ways and the various responses they employ in context. Results could have some interesting policy implications, both with regards to design of hedging schemes, general agricultural support schemes, and rural policy.

Numerous researches (see for examples: Liu (2007); Harrison et al. (2005, 2008) have then focused on the evaluation of farmers' risk attitudes by experimental techniques. The indirect approach or the revealed preference method uses econometric methods to estimate farmers' risk aversion based on observed real decisions (Antle (1987); Chavas and Holt (1990). The main criticism of econometric approach is that the estimation of risk aversion provides from the difference between observed and predicted behaviors, and this difference is entirely attributed to risk aversion. Such difference can be also justified by many factors other than risk aversion (Young, (1979). The psychologist literature suggests that it is appropriate to consider risk attitudes as a personality trait that crucially depends upon the context. For example, a study by Weber et al. (2002) demonstrated that people are not consistently risk averse or risk seeking across a variety of domains (e.g., social, recreational, health, safety, gambling, ethical, and investments). As a result, psychologists have developed some questionnaires allowing to assess the risk attitude of individuals for various domains of application. The psychological questionnaire is the Domain-Specific Risk-Taking (DOSPERT) scale, Weber et al. (2002). It has been described as one of the most useful measures of risk behavior across a number of everyday situations.

### **Locus of Control (LOC)**

In addition to risk, having an internal economic locus of control positively relates to the decision to participate in risky assets, as well as the share of risky investments in a household, (Nicolas 2013). There is evidence that internal locus of control is important in a range of economic situations, such as the labor market (e.g., Bowles et al., 2001, Coleman and DeLeire, 2003; Heineck and Anger, 2010) and the credit market (Tokunaga, 1993), as well as entrepreneurship (Evans and Leighton, 1989), which suggests it can be an important predictor of individual decisions. An individual with an internal locus of control believes that his/her success or failure is more related to his/her effort, aptitude and ability (Gage and Berliner, 1992; Slavin, 1986; Zuckerman, 1979; Fry and Ghosh, 1980; Fanelli, 1977). Such people are attracted by situations in which they believe that their personal abilities can exert a control over the environment (Chebat, Zuccaro and Filiatrault, 1992: 598). Those who generally attribute their success or failure to luck or task difficulty or other people's action or environment are said to have an external locus of control. (Karnes and McGinnis, 1996; Gage and Berliner, 1992; Slavin, 1986; Fry and Ghosh 1980; Zuckerman, 1979; Fanelli, 1977).

The psychometric test Locus of Control (LOC) has been used extensively throughout society and industry ever since it was formalized in the 1950-1960s (James, 1957; Rotter, 1966). Furthermore, LOC may be related to other aspects of farming such as the general satisfaction obtained. Thomas (2001) showed that agricultural entrepreneurship was particularly prevalent in cultures where people have an internal LOC. Similarly Blau (1993) found LOC was related to initiative and compliant performance of employees. All this work makes it clear there has been considerable focus on LOC with reference to entrepreneurship in agriculture. As Schiebel (1999) talks about using a LOC test for identifying important characteristics of farmers in Austria. In a more objective study, Van Kooten et al. (1986) related farmers' LOC to their goals and found significant relationships concluding that externals are more likely to pursue goals of avoiding low profits/losses, and reducing farm debt. They also found farmers who were 'more external' had greater net worth (to reduce potential debt created problems) and decreased leisure time relative to 'internals'. Van Kooten et al. (1986) conclude 'Since the locus of control has its foundations in psychology, the (Internal-External) I-E LOC scale offers a rich potential in future extension research in agricultural economics'. As Extension programme efforts to change a farmer's view of his control, Kaine et al. (2003) in an extensive study of primary producers in the wheat-sheep zone of South East Australia, found producers with a strongly internal LOC were more likely to adopt a prospective farm strategy, and less likely to

experience low financial performance. They commented that the 'inclusion (in extension programmes) of activities aimed at increasing the internality of producers' locus of control & is likely to increase the adoption of new skills and ideas among primary producers' (Kaine et al., 2003: 790). Kaine et al. (2004) also found a 'statistically significant relationship between producers' locus of control, and their propensity to adopt innovations and to participate in extension activities' However, few extension programmes have specifically targeted changing producers' LOC, which highlights the importance of LOC in extension programmes. Further In agriculture Kaine et al. (2003, 2004) found that the LOC correlated with farmers' propensity to adopt innovations, to participate in extension activities and their financial performance, and Van Kooten et al. (1986) found that the LOC correlated with farmers' objectives. Also having an internal or external LOC adds considerably to the stress bearing capacity, mental stability and managerial ability of farmers, which directly influences the degree of benefits, availed from extension programmes. However, there is clear evidence that internality does cause, or is linked to, high ability. Given the extensive use of LOC throughout many sectors of society, and the promise shown of LOC's value in agriculture, it is important that this possible relationship between LOC and success be explored in financing intervention schemes.

Extension professionals have to interact effectively with farmers, and need to know how farmers feel and think about their surroundings. Since we cannot actually see dispositions, we can only infer them from what a person says and does (Brehm and Kassim, 1993).

Nuthall (2009) in his research on identifying the role of locus of control in extension services for farmers and identified following factors to determine internal or external locus of control.

(1) People and luck negativity (2) Conservative traditionalist (3) Determined despite bad luck (4) Careful and determined planner (5) Flexible achiever (6) Gene based traditionalist

Producers with a high proportion of factor one have little control belief and tend to be unsuccessful especially in dealing with people, whereas people with a high proportion of factor two believe you should stick to using tried and tested methods to avoid chance problems. Factor three relates to the belief that chance is responsible for bad outcomes (not bad management), whereas factor four involves a belief that careful planning is important and, particularly, leads to good labour outcomes. Factor five represents a positive belief that you clearly make your own luck whereas factor six embodies an acceptance that your genes determine ability, and consequently, outcomes. Any one will have a mix of these factors leading to an overall control belief, (Peter L. Nuthall, 2010). Kaine et al.(2004) also reviewed studies on modifying a producers' LOC and commented 'Recent work has shown it is possible to increase the internality of peoples' locus of control using techniques such as skills instruction, feedback, modelling behavior rehearsal, social reinforcement and experiential education in various combinations'.

### **Qualitative Dimensions**

The qualitative dimensions incorporated for evaluation of agricultural financing intervention schemes include precedent factors which are feasibility, flexibility, reliability and accessibility of schemes. In this regard Richard L. Meyer in 2002 highlighted that flexible financial policies and products will meet client demands and preferences. Also financial feasibility is a necessary condition for the sustainability of the financing schemes, (Atul Kumar Sandip Katiyar 2006). Further facilitation of access to credit schemes can raise amount of productive investment as credit accessibility is important for improvement of quality and quantity of farm products, (M. R. Kohansal et, al; 2008).

The combination of factors feasibility, flexibility, accessibility and reliability constitutes the qualitative dimensions of effectiveness evaluation for financing schemes. The research combines both quantitative and qualitative tools as described by Hong Son Nghiem (2006). Particular issues in relation to undertaking the both research tools and integrating later results obtained from the two methods should be dealt with. After having presented briefly the possible methodological constraints some concluding remarks are drawn out in relation to this particular model.

### **Quantitative Dimensions**

The quantitative dimensions incorporated for effectiveness evaluation of agricultural financing intervention schemes include latent factors which are allocative, technical and economic efficiency (or effectiveness) through the use of DEA (Data Envelop Analysis) as applied by van Thiel & Leeuw in 2002. Several recent studies on the technical efficiency (TE) and economic efficiency (EE) of crop production indicated the existence of a 'yield gap'. This 'gap' refers to the difference in productivity between 'best practice farms' and other farms that operate with comparable available resources under similar circumstances (Villano, 2005). The presence of shortfalls in efficiency indicates that output can be increased with given inputs and existing technologies and schemes. It also helps to find out whether the yield variability is due to random influences beyond the control of the farmers or to the factors under the control of the farms. Therefore for a program to be found effective, it must also meet all Standards for efficacy. As effective programs and policies are a subset of efficacious interventions, which leads to policy makers, and administrators to determine which interventions are efficacious, which are effective, and which are ready for dissemination. (Brian R. Flay, et; al, 2005). The various explanations of effectiveness with reference to interventions through various researches have highlighted that effectiveness refers to effects of a program or policy under more real-world conditions (Flay, 1986; Greenberg, 2004; Holder *et al.*, 1995, 1999; Kellam & Langevin, 2003; Last, 1988; Moscicki, 1993). Chua and Llanto (1996), defined effectiveness as the ability of service providers to design and deliver financial products that meet the needs of the target clients.

### **CONCLUSIONS AND IMPLICATIONS**

In the light of the above discussion the study has shown to establish and clarify the relationships of risk behavior, locus of control, institutional, policy and farm structure variables. The main contribution of this paper is the examination of specific factors that affect financing intervention schemes in the context of individual behavior, financing scheme, targeted area and the exploration of the extent to which they mediate effectiveness. These variables appear to be the crucial factors determining effectiveness. These findings have important policy implications, as they point to ways in which policy-makers may intervene in positive community development. On the basis of this study, it is suggested that it is essential to support, smallholder farmers risk domains. Finally, studying the fundamental causes for presence of multiple perceptions and judgments is important, as it is a premise on which any strategy can improve the rural livelihoods to be founded. If successful, this research should aid academia, researchers and policy-makers to understand the complexity of effectiveness evaluation in the rural financing.

The implications of the research model are three fold. First the aim is to put forth the criteria for evaluation of financing intervention scheme through the use of quantitative dimensions, which are allocative efficiency, economic efficiency and technical efficiency as latent factors. Secondly the paper concentrates on evaluation of policy through qualitative dimensions which include feasibility, flexibility, reliability and accessibility of financing schemes as precedent factors. Thirdly and finally the model clarifies the individual behavioral dimensions to be considered in policy

formulation for agricultural credit financing. Behavioral dimensions include risk behavior and locus of control, which are important aspects of an individual's behavior in availing maximum benefits from schemes as evident from literature. Risk behavior is evaluated through the use of various domains which are important in exploring risk perception and risk attitude that leads to risk behavior and finally the effectiveness of financing schemes.

## IMPLICATIONS FOR FUTURE RESEARCH

Although this paper is differentiated from other previous work and expanded the research scope, like all studies, there are a few limitations that should be considered when interpreting the results and implications. First, the research model was developed through qualitative study of available literature and can be validated through empirical data gathering in future research. Since the study is cross-sectional in design, a further examination of our argument using a longitudinal study is recommended in the future to investigate our model in different time periods, which may strengthen the findings and eventually achieve statistical generalization. Apart from the above, we must point out that although there are majority of the hypothesized relationships, there is still need to find additional variables to compensate, and improve the model's ability to predict. However, there are also other opportunities to build on this study in future research. Suggested areas include re-examining the proposed model in evaluation of schemes other than agricultural financing intervention schemes. Also it would be valuable that future research use other theoretical bases or different methodologies and sample to derive more predictions.

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