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THE NEED FOR FLEXIBILITY IN SMALL FARMER CREDIT PROGRAMS

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## I. Introduction

The papers prepared for the Spring Review focused on a number of interesting policy issues. Three of these appear to be of major importance. These are: (1) What are the payoffs to credit use at the farm level and how do technological barriers relate to these payoffs? (2) What are the impacts of credit policies, especially interest rates on the allocation of credit and the mobilization of savings? (3) What institutional forms should be used in credit delivery systems?

These issues were extensively discussed and most of the pertinent questions have been raised in the papers prepared for the Spring Review. There is one dimension of small farmer credit programs, however, that was relatively neglected. This relates to the need for flexibility in credit programs.

By flexibility, I wish to indicate that agricultural development is a dynamic process involving many different decision units and that heterogeneity and change call for regular adjustments in development policies. Various phases of development present different demand and supply conditions for liquid resources. Furthermore, within a set of farms that appear to be homogeneous in all respects, different farms can be in quite different phases of the development process. It follows then that no one set of inflexible credit policies, even when deemed appropriate for a given phase, would continue to be sufficient. I wish to illustrate this

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point in greater detail with reference to the availability and adoption of "new technologies" which often define the "preconditions" for the success of small farmer credit programs [15,25,3].

This issue of flexibility has not been neglected in the analytic papers [3,7,24]. On the contrary, a number of the credit programs cited reflect a concern for both the dynamics and heterogeneity of farm situations that characterize agricultural development experience in the LDC's. I wish to emphasize these and to argue that flexible policies are needed to respond to these differing farm situations and their continual change over time.

## II. Cross-Sectional Flexibility

The authors of the papers under review<sup>1</sup> indicate that there is a vast cross-sectional heterogeneity in farm characteristics from country to country, region to region, and even within a region that prevent easy generalizations. The importance for credit programs of farm level details needs to be reiterated. Factors such as farm size, type of enterprise, tenure conditions, degree of oligopoly in factor (especially capital) and product markets, the extent of subsistence production, and the degree of access to commercial markets need to be carefully understood when designing farmer credit programs. This is particularly important when the focus is on rural families who may be located on subsistence farms.

There is a growing concern that traditional economic theory which separates household decisions from firm decisions is inadequate in describing behavior of small subsistence farmers. These types of units allocate time between leisure and income, and income between current and future consumption (savings) and this allocation depends upon firm decisions to allocate resources between direct (current) and roundabout (future) means of production. This separation of the overall economic allocation problem into two parts--the household income allocation problem described by constrained utility maximization, and a firm resource allocation problem described by profit maximization and our research results based on this decomposition need to be carefully examined. This fundamental interdependence between firm and household decisions has long been recognized [12, 16,20], but only recently has the importance of subsistence been

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<sup>1</sup>See bibliography that lists the analytic papers prepared for the Spring Review.

emphasized [26] and empirical studies have been designed to take its impact into account [14,4,8,6].

Much more work, both theoretical and empirical, needs to be done in this direction. This heterogeneity between farms with regard to the degree of subsistence is crucial to our understanding of the role of credit in small farmer programs because it determines the meaning and content of such concepts as "capital constraint," "absorptive capacity for credit," and the "marginal productivity of capital" and "productive vs. unproductive use of capital," so frequently used in credit analysis.

To some extent there is an underlying awareness of the importance of subsistence [17] and cross-sectional farm level heterogeneity [1]. To be successful, small farmer credit programs should be flexible enough to meet the needs of the individual clientele. Markets are more capable of responding to heterogeneity, whereas institutional structures, unless especially designed to be flexible, are not. The distinction is a bit artificial since perfect markets are really a form of fully adaptive and flexible institutions.

In urging a greater need to strengthen and integrate capital markets, I may be bordering on a cliché. However, there is enough evidence to indicate that the failure of institutional sources of credit to displace the traditional non-institutional sources, even where interest differentials between these sources are large, is due in part to the ability of the latter to adjust to subsistence conditions and farm level heterogeneity. Thus, for example, institutional credit programs continue to differentiate between "productive" and "unproductive" uses of credit, encouraging the former with subsidies while attempting to deny the latter. This dubious distinction comes from our separation of firm from household decisions in our models. In a subsistence household expenditures on maintenance of family labor, a crucial input into the firm's production process, should be viewed as necessary operating expenses for the firm. Surely, if the same farm were to hire labor, its cash payments would be considered a production not a consumption outlay worthy of credit support. Furthermore, unless all credit is tied to specific inputs, there is nothing to prevent farmers from using funds as they please. Even when "credit" is in physical inputs farmers have been known to sell them and use the proceeds as they see fit. Institutional credit programs then find that they have to "police" their loans. Non-institutional sources recognize these issues and often do not discriminate in this manner [3]. Similar incongruities arise when we examine such factors as risk aversion, technological adjustment, and market response in the context of subsistence [25].

A re-examination of our research tools and theories to take into account the real environment and its constraints as faced by small farmers is essential [9,10]. Such a need has already been recognized in a broader sense, as evidenced by the growing concern with "human capital," its content and impact on development.

### III. Flexibility Over Time

Further heterogeneity is introduced through time. Not only do farm characteristics differ substantially but they also change as different farms pass through different phases of development. A substantial part of the heterogeneity reflected in any observed cross-section is due to individual farms being in different phases of the "development process."<sup>2</sup> Clearly, the phases through which farms pass call for a flexibility over time in credit programs designed to serve them.

I wish to illustrate the idea of phases in the development process and the need for flexibility over time in credit programs by concentrating on the case where adoption of new technologies is an important factor in the strategy for agricultural development.

For purposes of illustration, I distinguish three main phases--before, during, and after the availability and adoption of new technologies. In doing so, I abstract both from situations where other avenues than a breakthrough in new technologies exist for rapid agricultural growth, as well as from other possible stages of development prior to and long after the new technologies have been adopted.<sup>3</sup>

#### Phase I: Before the Introduction of New Technologies

For convenience we consider this in terms of the "traditional equilibrium" as characterized by Schultz [22]. The main characteristics

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<sup>2</sup>I wish to distinguish phases of "development" from the phases of the "farm life cycle" (i.e., establishment-expansion-consolidation-demise) with which the word "phase" is usually associated in many studies. The distinction is not altogether clear as both phases are determined primarily by farm level investments [13].

<sup>3</sup>In this sense, we are concerned only with one stage--that is the availability of new technologies which has three phases. So, the focus is limited and more precise.

of this phase with a bearing on credit programs are:

- i) the state of the arts is constant;
- ii) the state of preference for holding and acquiring income streams are constant and stable;
- iii) the rates of returns to on-farm investments are so low that given (i) and (ii) there is an equilibrium in which, given the trade-off between current and future income streams, few additional investments are made and net savings are low.

In addition, I wish to emphasize that rural capital markets may be highly fragmented with different farmers facing different rates of return on credit and savings [8]. Therefore, we add the institutional characteristics of the rural credit market as follows:

- iv) rural capital markets are characterized by a high degree of oligopoly and differentiation, most of the supply of liquid funds is in the hands of non-institutional lenders whose relationship with creditors is imbedded in a matrix of highly inter-dependent socio-economic relationships.

Phase II: Transitional - During the Adoption of New Technologies

This phase may be characterized by:

- i) dramatic breakthroughs in the state-of-the-arts associated with yield increasing and labor savings technologies;
- ii) a widespread dissemination and adoption of these technologies;
- iii) a dramatic and continuous change in the preferences and motives for acquiring new sources of incomes;
- iv) a discrete increase in the rates of returns to on-farm investments such that given (i) through (iii), the trade-off between current and future income streams calls forth substantial demand for investment;

- v) rural capital markets remain fragmented with continued elements of oligopoly and differentiation in the non-institutional sector and a high degree of homogeneity in the institutional sector [18, 21].

Phase III: Transitional - After the Adoption of New Technologies

Although the detailed characteristics of this phase vary considerably, its principle characteristics may be listed as follows:

- i) the near exhaustion of new on-farm investment opportunities with only marginally profitable technologies forthcoming;
- ii) a continuing change in the preferences and motives for acquiring new sources of income;
- iii) an advanced stage of commercialization of agriculture in both the input and output markets;
- iv) the introduction of a new set of consumer goods, and given (i) through (iii) a marked shift in the trade-off between current and future incomes in favor of current consumption;
- v) with the growing importance and dominance of institutional credit, rural capital markets are integrated; and
- vi) a growing rural access to non-rural credit and investment opportunities and vice versa.

I am aware that in describing these phases, we are open to all the criticisms leveled against stage theories. In particular, there are special problems in generalizing about the various characteristics in each phase, even if we were to agree on the phase sequence. In reality, some characteristics of one phase often appear in another, while the phases themselves cannot be discretely separated. In addition, some of the characteristics of phase three are more in the nature of conjecture rather than based on experience.

Given these limitations, however, we can proceed to use these phases as an operational device with which to illustrate several arguments. The main point I want to make is that both the role and

the impact of small farmer credit programs depend on the phase in which the majority of small farmers are in, and that credit policies should be cognizant of this changing role and adapt accordingly.

#### IV. The Market for Liquid Funds in Various Phases

It is too complex a task to analyze the implications of the characteristics of each phase on the market for liquid funds. Such a fully articulated theory is beyond the scope of the current paper. The presentation below is therefore to be viewed as an attempt to initiate discussion on these complex issues.

To see the implications of these phases in terms of the changing role and impact of credit programs, consider the market for "liquid funds" in which credit operates. The market for liquid funds is a larger concept than the market for investable funds, as we wish to include the consumption and production demands on liquidity. It is also broader than the market for loanable funds as we wish to include the farmers' own internal financial resources in addition to the supply from non-institutional and institutional sources. Therefore, we are concerned with the total demand and total supply of "liquidity" in various phases, whatever its source and whatever its use.

##### Phase I

In order to focus sharply on the comparative conditions of demand and supply, we further simplify by abstracting from the problems of the degree of fragmentation and the degrees of oligopoly in the rural capital markets and assume that farmers face moneylenders who are monopolists in the non-institutional credit market. This situation in Phase I is illustrated in Figure I where the moneylenders equate marginal costs to marginal revenues, and the prevailing interest rate is  $r_0$ , credit outstanding is  $F_0$ , and moneylender profits are shown by the shaded area

In examining the total demand and supply conditions there are three underlying assumptions behind Figure I:

- 1) The total demand for liquid funds consists of two components--a demand on the part of the household for "consumption" requirements, often tied to subsistence or survival needs on small farms, as well as a demand by the firm for cash requirements for



essential inputs for current production. We assume the money-lenders do not discriminate in extending credit between these two needs.

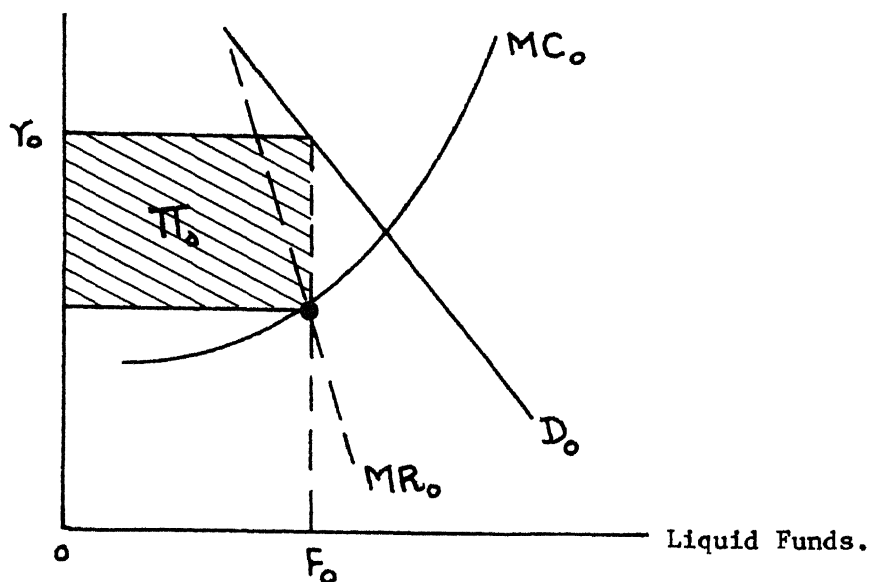


FIGURE I. The Market for Liquid Funds in Phase I.

2) The supply of liquid funds also consists of two components--the firm households' own internal funds and the external funds supplied by the moneylender. We assume that in this phase the internal supply of liquid funds is limited in relation to external funds.

3) We assume that there are no institutional credit programs catering to the needs of the small farmers.

Now, let us examine the impact of institutional credit in this situation. To begin with let us assume that a fixed amount of institutional credit is introduced at rates slightly below moneylender interest rates. In such a case, the moneylenders become "residual suppliers," that is, the demand curve facing them shifts backwards. Another way of showing the same effect is to shift the marginal cost curve outwards to  $MC_1$  by the same amount as the fixed supply of institutional credit  $S_1$ . This is shown in Figure II.

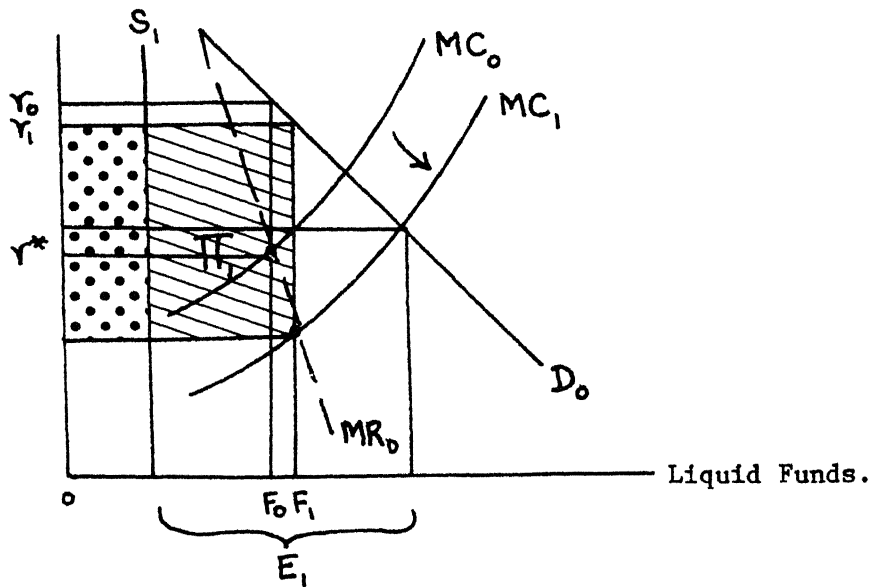


FIGURE II. The Market for Liquid Funds With  
With Institutional Credit in Phase I .

The impact is threefold:

- a) interest rates at which farmers can borrow are lowered from  $V_0$  to  $V_1$ , for as total supply is increased, moneylenders as re-residual suppliers face reduced demand schedules;
- b) the amount of credit outstanding in the system is increased from  $F_0$  to  $F_1$  and pari-pasu either more production or consumption needs are being met, and if investments are interest elastic, more is being invested;
- c) moneylenders monopoly profits (shown by cross-hatched area  $\Pi_1$ ) are likely to be reduced even if demand is interest elastic, for a share of these profits are captured by the institutional credit agencies (the area with dots ) as moneylenders are assumed to be residual suppliers.

To the extent that the primary goals of a small farmer credit program in phase I are i) to lower the interest rates at which farmers borrow for production and consumption needs, ii) to reduce the dependence of the farmers on the moneylender, and iii) to reduce moneylender monopoly profits and monopoly power, these goals are directly achieved.

The extent to which these goals are achieved may be limited by institutional credit programs as presently conceived because they do not cater to the "consumption" needs of small farmers. In this case, the market discriminates by use and the moneylenders continue to provide consumption loans and continue to charge higher interest rates. Also, without the development of product markets, loan repayments are often in kind and the moneylenders continue to maintain their share of small farmer borrowing. These "tie-in" arrangements prevent small subsistence farmers from taking full advantage of institutional credit.

In view of our earlier discussion about the nature of subsistence and of firm-household decisions, it might be asked whether institutional credit should be restricted to narrowly conceived "productive" needs. If in fact it were possible to separate consumption and production uses clearly, then separate and distinct markets could continue to cater to them. But an allocation of loans by use lends itself to a process of "internal arbitrage" wherein

funds are used for variously felt needs irrespective of the source. Part of the default problem may arise due to the fact that repayment schedules assume that credit tied to a given "productive" use was actually so used.<sup>4</sup>

But what are the alternatives? I wish to argue that if institutional credit has to be used, specifically, it must be tied to the effective dissemination and availability of new technologies.

Before we turn to this issue, however, we should emphasize that one of the goals of small farmer programs should not be to peg interest rates below the market, for all this accomplishes is to create an excess demand for institutional credit. This can be seen in Figure II where attempts to peg institutional rates of interest at  $r^*$  (shown here as the rate that would prevail if there was perfect competition in capital markets) leads to an excess demand of  $E_1$  for institutional credit.

There are three specific arguments against pegging interest rates far below the market rate: 1) low interest rates lead to excess demand and under these conditions, market discrimination gives way to non-market discrimination, usually to the disadvantage of small farmers who do not have access to political power and wealth [11]; 2) low interest rates prevent credit institutions from covering administrative costs, which are high for small farmers forcing them to give loans to a few low risk clients preventing their realization of economies of scales [5]; and 3) low interest rates capture a smaller share of moneylenders monopoly profits (thus, in Figure II the shaded area bounded by  $S_1$  to the left and between  $r^*$  and  $r^1$  continues to accrue to moneylenders).

## Phase II

In phase two, both the demand and supply schedules shift outwards as shown in Figure III. The demand schedule shifts to  $D_1$ , corresponding to a substantial upward shift in the marginal efficiency of capital schedule occasioned by the introduction of new technologies. This shift is usually discrete and dramatic. Further, there is some evidence that at the prevailing interest rate  $r_1$ , the demand becomes more interest inelastic [23].

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<sup>4</sup>Note that credit for "consumption" uses can also be productive but the timing of the "returns" in terms of cash flows differs substantially.

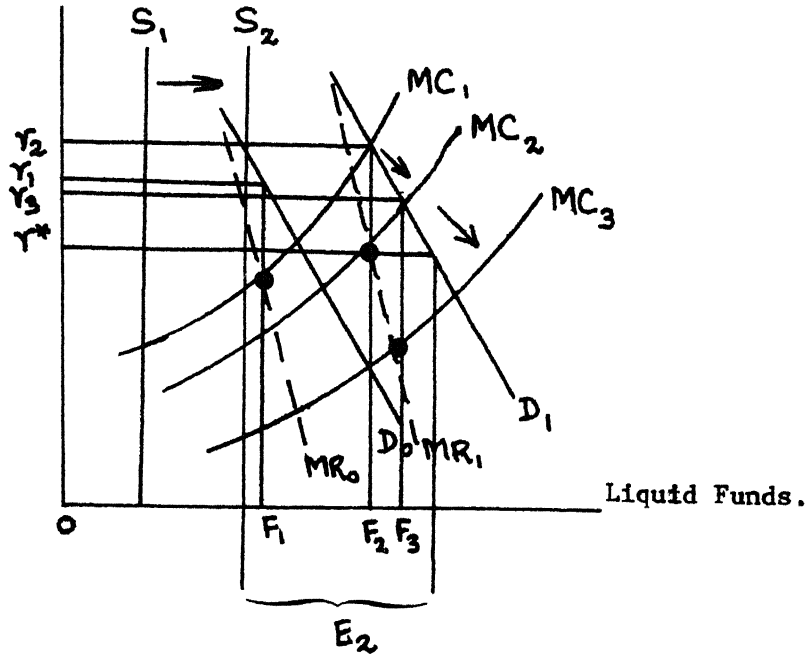


FIGURE III. The Market for Liquid Funds With Increasing Institutional Credit in Phase II .

The supply schedule also shifts outwards to  $MC_2$  as internal resources previously consumed or held in the form of near liquid assets are released.

The reason for this increased flow of internal resources for production and investment use is that the trade-off between current and future income streams has dramatically shifted against current consumption, even given the same rate of time preference. Thus, the introduction of new technologies with high payoffs are accompanied by increasing marginal propensities to save.<sup>5</sup>

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<sup>5</sup>The impact of dramatic shifts in the rates of return on household savings needs to be carefully researched. That these rates of return should be an argument in the consumption (savings) function has been argued by McKinnon [18], [19] and Adams and Singh [2].

A part of the funds come from reduced consumption even at a "subsistence level."

Further financial resources are forthcoming from accumulated savings (wealth) over time from the funds that the firm household has set aside for "dire" emergency. For an idea of what constitutes a "dire" emergency, one needs to visit a road construction site in India where displaced, landless laborers and their wives and children work for a pittance, while their womenfolk wear heavy ornaments of silver. Households with some land to cultivate are even better off, and gold and jewelry are family wealth hoarded sometimes over generations. But just as it is the last resource set aside for the most calamitous of emergencies, no peasant household will part with them for anything but the most assured and absolutely certain returns.

One cannot neglect the importance of internal savings materializing in the most abject of conditions (e.g., Bangladesh and Zambia).<sup>6</sup> As a general rule, the higher and more certain the payoffs become, and the more reinforced the farmers experience in this regard, the larger the amount of internal resources forthcoming from reduced consumption and conversion of accumulated assets into liquidity for on-farm use.

The impact on interest rates, in the absence of an expanding institutional credit program is to raise interest rates from  $r_1$  to  $r_2$ . This is because shifts in demand are likely to exceed any shifts in supply due to an increase in the availability of internal funds.<sup>7</sup>

In phase two, the role of institutional credit programs should be:

- i) to provide increasing amounts of credit as demand increases after the initial adoption of new technologies;
- ii) to prevent interest rates from increasing and perhaps even to lower them so that they do not become an initial barrier to the adoption of new technologies.<sup>8</sup>

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<sup>6</sup>See the Spring Review Country Papers on Bangladesh and Zambia.

<sup>7</sup>See Singh and Day [23] for some evidence in this regard for the Indian Punjab.

<sup>8</sup>We say initial because there is some evidence that once new technologies have proved their profitability, higher interest rates are unlikely to prevent their further adoption [23].

- iii) to blend in credit as a "package" with new technology--its knowledge, dissemination, availability of its inputs, its management and even assurance of markets for its output.
- iv) to help create more competitive conditions in local rural credit markets by setting up multiple credit, marketing and input supply agencies in the rural sector, and supplying credit through them.

Thus, increasing institutional credit from  $S_1$  to  $S_2$  shifts the supply curve outwards to  $MC_3$ , lowering interest rates to  $r_3$  below previous levels at  $r_1$ . In order to accomplish this institutional credit must expand at a rate faster than demand.<sup>9</sup>

Again, the result of pegging interest rates at say  $r^*$  in Figure III means an excess demand of  $E_2$  for institutional credit, with all its attendant consequences. The inevitable result is that the discriminating role of the market is forfeited and replaced by other forms of non-market discrimination [18,21]. Other forms of non-market discrimination finds its victims among the small and powerless. It is no mystery that under conditions of excess demand small farmers find little access to credit. No matter what the stated goals of the small farmer credit program, those without power will not be the ones to benefit.

As stated most clearly in the paper by Gonzales-Vega [11], by not adapting the goals of the credit program to the changing demand situation brought about by the availability of new high payoff technologies, most small farmer programs help to subvert their own goals. What is needed is a greater reliance on the market at this point and the use of higher institutional interest rates as at  $r_3$  to ration the available credit. Precipitous changes in interest rates are to be avoided but by no means should credit programs continue to offer rates that are so low that access to credit becomes a function of rural power.

### Phase III

In phase three, the demand for liquid funds continues to shift outwards to  $D_2$ , and becomes more interest elastic over most of its range.<sup>10</sup> This is shown in Figure IV.

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<sup>9</sup>Actually how much credit expansion is required to lower interest rates is an empirical issue and specific to time and place.

<sup>10</sup>See Singh and Day [23] for evidence in the case of the Indian Punjab.

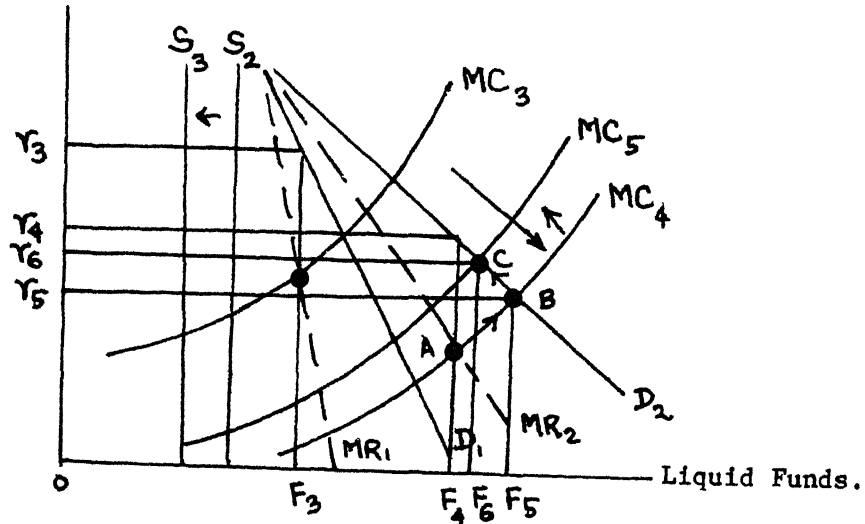


FIGURE IV. The Market for Liquid Funds With Diminishing Institutional Credit in Phase III.

Furthermore, as new technologies bring higher returns and increased marketed surpluses, the internal cash flows within firm households increase substantially. Internal financial resources shift the supply schedule outwards substantially to  $MC_4$ , lowering the market rate to  $r_4$ .

If market interest rates were maintained in phase two, and a multiple set of local credit and other agencies had been set up, they begin to mobilize rural savings by themselves. These savings come partly from the increased interest rates that were maintained earlier and partly from increased cash flows generated in firm households. The mobilization of these increased savings if combined



with an encouragement of competition<sup>11</sup> destroys the monopoly nature of the informal credit market and interest rates fall further to  $r_5$  as credit suppliers equate marginal costs to average (marginal) revenues (a move from A to B). We perceive monopolistic conditions in rural credit markets being reduced seriously only when a number of competing agencies provide credit access to small farmers and enough cash flows for these institutions are generated internally in the rural sector.

Actually interest rates may not fall substantially if new consumer goods are also introduced in rural markets. Consumption expenditures on bicycles, transistor radios and travel now lower the marginal propensity to save somewhat. New consumer goods and their demonstration effect change once again the trade-off between current and future income streams in favor of current consumption. In addition, once local credit agencies have begun to generate their own supply of funds, the special credit program now needs to be slowly phased out. A reduction of institutional credit from  $S_2$  to  $S_3$  combined with an increased propensity to consume means that the supply schedule shifts back to  $MC_5$  with slightly higher interest rate at  $r_6$ . (A shift from B to C.)

Therefore, the role of small farmer credit programs in Phase III is:

- i) to encourage an increased proportion of the marginal cash flows generated in firm households to go into the self-financing of farm operations;
- ii) to encourage rural savings mobilization by providing appropriate interest rate and other incentives;
- iii) to encourage competition among local rural loan associations over which some control can be maintained by the ability of the credit program to re-finance their notes;
- iv) to encourage local rural loan associations to become self-reliant so as to enable the credit program to be eventually phased out as a growing and integrated rural capital market develops.

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<sup>11</sup>That is competition among local credit agencies through which the central credit agency supplies credit.

We wish to emphasize this last point, as no special credit program should become self-perpetuating. Its ability to phase itself out and become integrated into the regular financial system should be considered as the best evidence of its success.

## V. Summary

We have attempted in this paper to indicate the need for flexibility in small farmer credit programs. A need for such flexibility is paramount both because of farm level heterogeneity and the dynamics of the demand for and supply of liquid funds in different phases of development.

We have focused our attention on three technology phases. No doubt other phases could be used to make the same point: that the role and impact of small farmer credit programs depend on the phase in which the majority of small farmers are in, and that credit policies should be designed to be aware of their changing role and adjust accordingly.

Just prior to the availability of new technologies the role of institutional credit is seen to be i) to lower interest rates, ii) reduce small farmer dependence on moneylenders and iii) to reduce moneylender monopoly profits. This can be achieved without resorting to subsidized credit, although a reluctance to provide credit for consumption needs may hamper the achievement of these goals.

During the period of transition to the adoption of new technologies, the main credit roles are seen to be i) to provide large amounts of credit as demand rises substantially and by so doing ii) prevent interest rates from increasing so that they do not become an initial barrier to the adoption of new technologies, iii) to tie credit to a package of new technologies and iv) to help institute a variety of local rural loan agencies to create competitive conditions in rural capital markets.

After the adoption of new technologies generates new cash flows in the rural sector, the role of the special credit program is i) to encourage credit institutions, ii) to mobilize these cash flows into financial savings, and iii) to make rural loan associations self-reliant by slowly phasing out the special programs and letting developing rural capital markets take over.

In no phase is the introduction of credit at subsidized rates seen to be beneficial to small farmers. Such subsidies create an excess demand for institutional credit with unfortunate consequences both from the point of the credit agency and of the small and under privileged who are supposed to be the main beneficiaries of such programs. Furthermore, a subsidy on credit brings about a greater eventual distortion in product and factor markets than specific product and factor subsidies. These distortions prevent rural credit markets from developing and their overall impact is to encourage the misallocation of scarce capital resources, often creating more problems than they were designed to solve.

To conclude, both heterogeneity across farms as well as the additional heterogeneity introduced through time as farms develop calls for a continually adjustable and flexible response in the rural financial sector. Credit programs can be partly designed to take this into account but a greater reliance on developing financial markets seems to be a more efficient way of meeting this problem.

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