Lele, UMA J. — ARTICLES and speeches (1972)

Folder

Speer BK - Lele

ROLE OF CREDIT AND MARKETING FUNCTIONS IN AGRICULTURAL DEVELOPMENT

by

Uma J. Lele

A Paper presented at the International Economic Association Conference on "The Place of Agriculture in the Development of Underdeveloped Countries" held in Bad Godesberg, Germany, August 26 to September 4, 1972.

THE ROLE OF CREDIT AND MARKETING FUNCTIONS IN AGRICULTURAL DEVELOPMENT

SUMMARY AND CONCLUSIONS

1. Agricultural credit and marketing play an important role in development of the agricultural sector. Credit and marketing functions are closely linked with each other. Improved and expanded markets for output and resulting incentive prices increase the demand for credit as well as increasing the farmer's ability to repay credit. Expanded credit facilities create demand for inputs and increase marketed surplus, providing an increased return on investment in market facilities. Inadequate credit and marketing facilities are major bottlenecks in spreading new agricultural technology, and increasing agricultural production. On the other hand, inappropriate policies related to credit and marketing have a substantial impact on the distribution of benefits from new technology, with significant implications for employment and welfare in the agricultural sector. Problems faced in expansion of credit and marketing policies are diverse and vary in different countries. They need a careful examination for evolving appropriate policies.

2. Although the magnitude of institutional credit in total agricultural finance has been increasing in most low income countries, its share still remains limited. There is overwhelming evidence that institutional credit has gone largely to the relatively large farmers, resulting in spiraling of income inequalities. These have been particularly accelerated where new technology has made strides. Compared to small farmers, large farmers have relatively greater access to short term credit allowing them the use of purchased inputs, which considerably increase profitability of investment in new technology. Large farmers also have greater access to medium and long term credit which increases their fixed investment in agriculture and raises productivity of working capital.

3. Unequal access of different size farms to an important means of production is justified neither on social nor on economic grounds. There is preponderence of evidence that under traditional technology, small farms show higher productivity of capital than do large farms. With technological change in the agricultural sector, productivity differences by farm size are not easy to isolate; these vary by crops; and are explained by differences in extension, management and by differences in responses to ecological conditions of different new varieties. These various factors have important implications for risk and uncertainty in adoption of new practices and therefore for ability of different size farms to adopt new technology. Greater access to credit facilities and marketing services can substantially reduce risks and the inability of small farms to cope with risk.

4. There is no evidence that the repayment rate of small farmers is worse than that of large farmers; on the contrary, the limited evidence shows that the overdues of large farmers are usually greater. The problem of large overdues is extensive and increases costs of distribution of credit.

5. Interest rates charged by credit institutions in LDC's are often too low to cover costs of credit distribution. The interest rate structure adversely affects supply of capital to credit institutions. The effect of interest rates on the demand for credit is difficult to assess because of its interaction with numerous other factors. However, evidence indicates that it is not so much the high interest rates as the inadequate supply of credit to small farmers and their relative inaccessibility to profitable technology which are the problems in broadening the distribution of benefits in the agricultural sectors of the LDC's.

6. Problems involving distribution of credit to small farmers are in some cases, simply procedural or administrative. Some are a result of resource constraints and still others of a lack of overall institutional development. Some arise from socio-political factors. These various problems can almost never be solved simply by creation of credit institutions but must involve changes in overall agricultural policies. However, given these constraints, there is a considerable need (a) for expansion of credit channels specifically to reach the small farmer and (b) for improving lending procedures. These credit policies must place a greater emphasis on the flow of income to be generated from investment and less on credit-worthiness in the form of existing distribution of income and wealth. They must also place a greater emphasis on mobilizing savings in the rural sector, than they have in the past.

7. The goals of the policy intervention in agricultural marketing may be (a) to reduce marketing costs, (b) to stabilize prices, (c) to expand market facilities to handle increased inputs and output and/or (d) to reduce the degree of dependence on a trading system that is otherwise unacceptable.

8. An impressive body of statistical evidence has accumulated which indicates that, contrary to general belief, the traditional marketing systems in LDC's are, by and large, highly competitive and operate efficiently given the conditions in which they function. Nevertheless a considerable scope exists for improving the physical and institutional infrastructure which at present reduces their efficiency. By contrast, introduction of public and cooperative marketing systems has, by and large, failed to reduce marketing costs.

9. The performance of cooperative and/or public agencies in price stabilization is more mixed when compared with their performance in reduction of marketing costs. In some cases and particularly in case

of individual cash crops, price stabilization has been achieved successfully through public and/or cooperative marketing systems. However, this has often been at the cost of consideration of overall efficiency in allocation of agricultural resources.

10. Market improvement policies must pay considerable attention to improvement of the market facilities rather than simply emphasizing forms of market organization. A variety of alternative forms of organization may be explored, for expansion of input and output marketing systems if economic efficiency is the criterion for policy intervention. However, particular types of marketing organizations may be selected if the goal is to achieve not simply economic efficiency but broader socio-political objectives.

ROLE OF CREDIT AND MARKETING FUNCTIONS IN AGRICULTURAL DEVELOPMENT

Table of Contents

ROLE OF CREDIT AND MARKETING FUNCTIONS IN AGRICULTURAL DEVELOPMENT *

Uma J. Lele**
I.B.R.D., Washington, D.C.

I. FUNCTIONS OF AGRICULTURAL CREDIT AND MARKETING

An agricultural credit system must allow free transfer of resources between sectors, between regions and across income classes so as to bring about an efficient allocation of a developing country's scarce resources. It must finance the needs arising from the burgeoning technological revolution in agricultural sectors. It must encourage and mobilize savings from the incomes generated by the expanding agricultural production. As an important factor of production, credit must play a pivotal role in fostering an equitable distribution of the increasing agricultural income. It must be used to create productive employment for absorbing the growing numbers of under-employed in the agricultural sectors. Credit can be a double-edged weapon significantly influencing welfare or human misery, broadening participation of the masses in the political process, or reinforcing feudalism.

The extent to which agricultural credit can perform these various diverse functions effectively rests, on the one hand, on the national commitment of the governments of the developing countries. It is thus complexly interwoven with their socio-political fabrics. On the other hand, it depends on the organizational abilities and skilled human resources required to create and nurture an appropriate institutional infrastructure.

---

* I have benefited from the comments on the previous draft of this paper by several of my colleagues, including Jack Duloy, Carl Eicher and John Mellor. I am grateful to Richard Longhurst and Regina Norton for their assistance in the literature review.

** The views expressed in this paper are those of the author and do not necessarily represent the views of the I.B.R.D.

An efficient agricultural marketing system must perform a variety of functions simultaneously. It must provide a timely supply of inputs to the agricultural sector. It must distribute seasonally produced agricultural output over time and space to processors and consumers at minimum cost. In the short run, it must mobilize market supplies from fixed production. In the long run, it must integrate local markets into national markets. Through transmitting price signals, it must foster an efficient allocation of resources in the agricultural sector. Over time, a market system must be able to service a growing agricultural sector and the related agro-based industries. As one of the largest service sectors in the economy, it must create productive employment opportunities to absorb growing unemployment in the agricultural sector.

The extent to which a market system performs these various functions efficiently depends on the availability and quality of (a) the physical infrastructure such as transport, storage, marketing and processing facilities, (b) the financial institutions, (c) the communications network and (d) the entrepreneurial and managerial manpower. Efficiency of the market system must thus be judged in the context of the constraints within which it works. Long run efficiency of the market system can be improved only by improving the conditions in which it operates.

The nature of a market organization may often play a crucial role in the performance of the market system. In a competitive market, free entry into trade, market information and adequate mobility are necessary conditions for distributional efficiency. Decision making is guided by

profit motive and efficiency is defined by profit maximization. Under a co-operatively and/or a publicly-managed market system, cost minimization will, among other things, depend on how well the market organization is conceived and how effectively it is administered.

Minimization of distributional costs may, however, not be the only goal of a market system. A great deal of human misery and disincentive to invest in traditional agriculture arises from price fluctuations over time and space. A market system may, therefore, aim at stabilizing prices during and between seasons so as to provide an incentive to increasing agricultural production. A market system may also aim at providing increasing control to the cultivator over his trading activities. Performance of a market system must be judged in such a context of multiple, economic and socio-political objectives.

Credit and marketing functions are closely linked with each other. Improved and expanded markets for output and resulting incentive prices increase the demand for credit as well as increasing the farmer's ability to repay credit. Expanded credit facilities create demand for inputs and increase marketed surplus, providing an increased return on investment in market facilities.

Inadequacy of credit and marketing systems leads to their lack of accessibility to a mass of small cultivators. Inefficiency in their operations implies lack of distributive justice. Both these factors result in sub-optimal resource use. They affect rate of capital formation and influence development of the agricultural sector.

Proper credit and marketing policies are a necessary condition for agricultural transformation. However, these may not always be sufficient. Often it is only when credit and marketing policies are accompanied by one or more technical innovations, which significantly increase the productivity of capital, that the policies may play a particularly significant role in increasing agricultural production and improving distribution of benefits in the rural sector. On the other hand, the spread of technical innovations is hampered by lack of credit and inefficiencies in marketing. Balanced development of the agricultural credit and marketing systems is a difficult task. It depends on the understanding of these numerous inter-related factors.

II. CREDIT AND MARKETING IN TRADITIONAL AGRICULTURE

In a traditional agriculture, capital, and hence credit, plays a relatively less important role than do land and labor.[1/] Often capital, including land clearing, leveling, etc., is also of a nature which can be largely financed by use of family labor. Market for land and hence need for financing land transfers is relatively insignificant. These arise mainly through inheritance and tribal rights. Use of purchased inputs other than labor is also by and large insignificant.

Finance in traditional agriculture is thus largely used for maintenance as distinct from expansion of agricultural activities. Typically, it is provided by traditional money lenders, village traders, friends and relatives. It is used for storage, marketing and processing of the agricultural surplus to provide a steady supply to consumers all through

the year. In addition to these trading needs, agricultural credit also plays an important role in meeting cash needs of farmers. In subsistence agriculture these needs are often large relative to income. Because of the close relationship of the household with the farm enterprise, it is often difficult to distinguish between production and consumption needs of the farmer. Credit needs fluctuate considerably from one year to another because of seasonality in agricultural production. With it does the ability of the farmer to repay debt. The dependence of a mass of subsistence farmers on maintenance credit, combined with their generally poor capacity to save, results in high uncertainty in repayment of loans. These various factors explain the vicious circle of poverty, high interest rates and indebtedness characteristic of a subsistence agriculture.

Traditional marketing systems operating in subsistence agriculture typically suffer from inadequate transport and storage facilities, lack of standardization in weights, measures and marketing charges, poor dissemination of market information, large number of intermediaries and inadequate finance for trading. Thus the popular view about traditional marketing in the LDC's is that markets for agricultural commodities do not operate efficiently in price signalling and that there are large price spreads between producers and consumers, both over time and space, that are caused by monopolistic and speculative elements.

A range of policy measures have emerged in LDC's to improve the market system. These have varied over time, space and commodities. However, they mainly consist of introduction of public, i.e. autonomous

and semi-autonomous, and/or co-operative marketing systems. In some cases, these policy interventions complement the traditional trading system whereas in others they substitute for a virtually nonexistent or a non-accepted indigenous system. All these various trading systems in LDC's leave a great deal of scope for improvements.

This paper discusses the policies required to alleviate the credit and marketing problems for development of the agricultural sector with a broad-based distribution of benefits. The paper is divided into separate parts on credit and marketing. The implications of interactions between credit and marketing policies are discussed in both parts.

III. CREDIT IN MODERNIZING AGRICULTURE

Modernizing agriculture requires large infusions of credit to finance use of purchased inputs such as fertilizer, improved seeds, insecticides, additional labor, etc. Medium and long term investments in landclearing, irrigation, land leveling, etc. also become much more essential for increasing agricultural production. Multiplier effects of a transforming agriculture increase profitability of agro-based industries, thus increasing demand for capital. Because savings in traditional agriculture tend to be relatively small at initial stages of development, increased demand for working and fixed capital must largely come from increased supply of credit. Credit institutions must perform the function of transfering savings between sectors, between regions, and between income classes. The type of transfers will vary, from one country to another and from one stage of agricultural development to another.

Modernizing agriculture requires co-ordination of a number of activities, such as extension, proper estimation of credit needs, timely and adequate supply of inputs, repayment arrangements suited to the ability and convenience of the farmer, effective machinery for recovery of loans and adequate marketing facilities. Traditional credit systems are often unable to meet these requirements of a co-ordinated approach in a modernizing agriculture and, therefore, necessitate introduction of institutional channels of credit.

If credit is to make a significant impact on agriculture, it is essential that credit machinery be expanded much more rapidly than would be feasible through non-institutional means alone. Institutional channels of credit may play a complementary or a substitute role vis-a-vis the traditional channels, depending on the stage of development of traditional credit.

Share of Institutional Credit

Although the magnitude of institutional credit has been growing rapidly in most LDC's in recent years, its share in total agricultural finance is still limited. The proportion of institutional to total credit, however, varies significantly from one country to another. In Brazil, the ratio of institutional agricultural credit to total institutional credit increased from 11 percent in 1960 to 25 percent in 1970.(15) Estimates on the share of institutional relative to non-institutional agricultural credit in Brazil could not be obtained. In Thailand, only about 5 percent of the estimated credit advanced in agriculture in 1963 came from credit co-operatives, the only institutional source then available to

farmers. During 1966 and 1970 in Thailand, production credit to farmers from institutional sources increased more than fivefold from ฿160 million in 1966 to ฿875 million in 1970. However, institutional credit as a proportion of the value of annual production remained low despite a significant relative increase from 0.5 percent to 2.8 percent from 1966 to 1970.[2/] Expansion of share of institutional credit has been much more impressive in India. Between 1951-52, 1961-62 and 1970-71, the share of institutional credit in total agricultural credit increased from 7.3 to 18.7 to about 40 percent respectively.(27)

Distribution of Institutional Credit by Farm Size

Small farmers have meagre internal resources and, therefore, are most in need of production credit. Evidence shows that when small farmers adopt new innovations, the proportion of their cash expenditure financed through borrowed funds is greater compared to larger farmers, indicating their greater dependence on borrowed capital (68). However, in most LDC's small farmers have much less access to institutional credit compared to larger farmers. Rao observes that in Brazil a very large proportion of the institutional loans goes to the relatively large farmers.(61) In a survey of 233 large commercial farmers in Southern Brazil, Erven noted that "only three percent of the total agricultural credit came from non-institutional sources", and all the rest from institutional sources.[3/] Numerous studies on Indian agriculture provide similar evidence.(27,62,75) The estimates based on the 1961 National Sample Survey and the 1961 Indian Census, show that nearly 60 percent of the Indian rural households own and/or operate a little over 80 percent of the total cultivated area in

farm sizes of 2 hectares or less. The Reserve Bank of India has, however, estimated that the total advances through primary credit societies (institutional) to borrowers with up to 2 hectares was only 27.5 percent of the total loans. Of the total number of farmers availing loans, 32 percent had holdings of up to 2 hectares.[4/]

Effects of Unequal Distribution of Credit

Unequal distribution of credit has often led to spiralling of income inequities. Disparities have been particularly accelerated where innovations have made strides. First, working capital requirements for purchase of fertilizer, seed, insecticide and labor increase substantially under new technology. Second, return to investment on durable capital is considerably greater under new technology. The greater accessibility of larger farmers to sources of credit increases their ability to adopt innovations in various ways. Use of credit as working capital facilitates purchase of inputs. Increased capital formation through medium and long term credit increases profitability of innovation. Inequities in incomes resulting from unequal access to credit are exacerbated by unequal ability of large and small farmers to bear risk and uncertainty. Poor ability to bear risk affects demand for credit by small farmers. However, risk-bearing ability is in itself influenced by access to credit, as, for example, in the case of assured water supply through investment in irrigation. The interaction of risk, uncertainty and demand for credit is often crucial in case of adoption of innovations.

An impressive body of statistical evidence has emerged recently, to support these various arguments. For example, studies show that in India

variable input per acre is as much as five times greater in case of new varieties as compared to traditional varieties. (23) Investment in durable capital is noted to be as much as seven times greater on 'modern farms' as compared to traditional farms. (16) Per acre durable investment is noted to be not only greater, but also increasing directly with farm size under new technology. (23)

Often the proportionate increases in income from adoption of innovations are greater than those in costs. High yielding varieties are noted to perform 1½ times to 30 times better than the traditional varieties. (79)[5/] Adoption of new technology and consequent high incomes thus significantly increase the rate of saving. Sisodia's study noted that in Indore district in India "the average rate of saving of the cultivators on the progressive farms is more than double that of the cultivators on the less progressive farms. Per capita savings of the progressive farmers is eight times greater than the less progressive farmers".(73) The marginal propensity to save of the progressive farmers is also higher than that of less progressive farmers. Because of unequal distribution of credit between sizes of different farms, savings increase considerably with farm size under modern technology. (53,64)

The big farmer also uses his own funds for capital formation to a larger extent compared to his smaller counterpart.[6/] Thus, when new technology is accompanied by unequal access to credit, the position of the small cultivator vis-a-vis larger farmers worsens considerably. He is not only able to borrow less, but can also save and reinvest less than a larger farmer.

Thus, a cumulative impact of unequal accessibility to credit increases relative income disparities. When combined with low interest rates it may also result in making the small farmer absolutely worse off in two ways. First, in a labor surplus agriculture the small farmer often derives part of his income from part-time employment outside his farm. Demand for hired labor has, at times, declined because of substitution of easy low cost capital for labor. (37,84) Second, increased and indiscriminate supply of low cost credit to larger farmers has provided possibilities for realization of economies of scale through mechanization, often resulting in eviction of tenants by owner cultivators and/or by purchases of small farmers' land by large farmers (37). Patterns of investments by farm size also show that compared with medium progressive farmers, the large progressive farmers borrow more for mechanization of their farms. The medium progressive farmers mostly borrow for irrigation. (52,71)

Increasing Agricultural Production and its Better Distribution: A Possible Trade Off

Productivity by Farm-Size: Unequal access to credit for increasing agricultural production may be justified under a number of conditions. First, if large farms are more productive than small farms and if a high preference is placed on increasing agricultural production, unequal access to credit by different farm sizes may be justified. The existing evidence is rather overwhelming that under traditional technology, where input of labor is much more important than that of capital, small farms have a higher yield per acre than do large farms. (10,33,48,60,66) The farm management surveys in India show this very strongly. Rao shows that in Brazil purchased inputs show greater marginal return on small farms than

on large farms, indicating greater under-utilization of operating expenses on small farms. (61) No comparative data are available by farm size for Kenya for similar enterprises. Vastoff's estimates, however, indicate a higher rate of return on investment in small farm development than that noted for development of large farms. (80)

Productivity differences by farm size are not as easy to isolate in case of new technology as in the case of traditional technology. They vary by crops and are explained by differences in extension and management and by differences in responses to ecological conditions of different new varieties. These various factors are not always easy to distinguish. For example, in case of paddy in Thanjavur district in India, the degree of uncertainty in reaching a yield level was much less in use of the new ADT 27, compared to a traditional variety; whereas in case of Bajra in Gujarat, more uncertainty surrounded the new variety compared to the old one. (69) The greater uncertainty entailed in the cultivation of new varieties particularly affects the motivation of the small farmer to adopt new technology given his lesser ability to bear risk. (81) It, thus, affects his demand for credit. (70)

Differential access to extension and credit reinforce the disadvantageous position of the small farmer in adopting new technology, resulting from his poor risk bearing ability. Gunvant Desai's investigations in India show that uncertainty related to new varieties can be reduced significantly by investment in irrigation. This latter substantially increases the demand for fertilizer, and hence for credit.(18,70)

To summarise, there is no evidence that, all else being equal, small farms are less productive than large ones. It is, however, possible that, unless a package of extension, credit and inputs reaches a small farmer as effectively as it reaches a large one, marginal productivity of capital on small farmers may be lower.

Overdues by Farm Size: If the return to investment on small farms is lower than that on large farms, either due to differences in technology or due to differences in uncertainty in using the same technology, it is possible that this will affect the small farmers' performance in repayment of credit. The argument presented above dispels the view that return to investment on small farms will be inherently lower than on large farms.

It is often alleged that, because of their higher propensity to consume, small farmers divert production credit to consumption, thus constituting a high risk in repayment of credit. Even if they use credit for production, because of their higher marginal propensity to consume, the increased income may be used for consumption rather than repayment of credit. Evidence indicates that diversion of institutional credit to uses other than those for which it is provided is widespread in LDC's. (7,67,73)7/ It is often used for repayment of debts and for consumption purposes. Although diversion of credit is particularly noticeable in the case of small farmers, the phenomenon is by no means restricted to them. Only the ways of diversion used by larger farmers are more devious. Evidence on diversion of institutional credit by politically powerful larger farmers is less documented than that on small farms because it is often inconvenient to the power structures in LDC's. Existing evidence shows that small farmers have a high, although

at times somewhat lower, marginal propensity to save than large farmers. (3,73,71) The risk, in lending to small farmers, may be judged on the basis of relative repayment performance by farm size.

Evidence is limited on whether repayment rates differ by farm size and on the factors responsible for differential rates of repayment. However, whatever evidence exists shows that record of default is by means worse for small cultivators when compared to large ones. In India, "a study made by the Program Evaluation organization of the planning commission on the working of 34 small and 33 large co-operative credit societies in the country revealed that, during the three years covered by the survey, in the case of the small societies, the percentage of overdues to loans outstanding was significantly higher among large farmers as compared to among small farmers. Among large farmers, the overdues constitute as much as 30 to 46 percent of the loans outstanding. In the case of large societies, however, percentage of overdues to loans outstanding does not show any distinct tendency in relation to the size of holding". (62) The experience in several African countries indicates that small farmers have a much better record of repayment as compared to their larger counterparts. In Ethiopia, as much as 97 percent of the small farmers have repaid credit in the first years of establishing the package programs.8/ The performance of the large farmers is relatively much poorer.

The better repayment performance of the small farmers is partly explained by their lesser ability to get away with overdues compared to large farmers who wield considerable political power. In these particular cases, the small farmers' performance is also explained by the

substantial improvement in their incomes resulting from production credit extended to them. In some cases increased incomes have prompted an impressive repayment record even in case of consumption credit extended through institutional means to small farmers.9/ Poor repayment is caused by unprofitable technology, poor extension, crop failures, untimely supply of inputs and low harvest prices. All of these factors affect a small farmer greater. (18) The latter two factors call for development of an efficient market system.

The problem of large overdues of credit is widespread and not necessarily confined to small farmers. It plagues credit institutions of most LDC's. Case studies show that the repayment rate was only 62.4 percent in six areas of the Philippines in 1964-65. (57) In Pakistan it was 79.5 percent in June 1965, four years after the Agricultural Development Bank was established. This was a slight improvement over the earlier rate of 77.4 percent. (32) Apte summarizes an all-India study which concluded: "a closer look at the overdue credit, vis-a-vis the share capital and/or owned funds during the past decade reveals that the overdue loans have progressively swollen in all the more developed States and have exceeded the share capital and are almost at par with the total owned funds". (5) More recently, a study of overdues at the State Bank of Patiala in India found that "the number of farmer loanees for production and instalment credit loans increased by 4 and 6.3 percent respectively from December 31, 1969 to July 31, 1970. The number of defaulters increased from 9 to 35 (288.89 percent) and from 9 to 166 (1744.44 percent) for production and instalment loans respectively during

the same period." (72) The large overdues have a harmful effect on the supply of financial resources to credit institutions.

Interest Rates and the Credit Market

Supply of resources to the financial institutions is also affected by low interest rates on deposits which discourage savings. The adverse effect of low interest rates on mobilizing financial resources of larger farmers and commercial institutions have significant implications for intersectoral, interregional and intertemporal movements of capital. Due to the highly variable nature of technical innovations in agriculture over time and space, these capital movements are particularly crucial in financing agricultural production.

Low income countries have myriad structures of interest rates which vary significantly from one country to another, and depend on terms and conditions of lending. (58) Institutional agricultural credit in most LDC's is, however, generally extended at interest rates lower than those charged by traditional moneylenders and traders. It often does not cover costs of credit distribution and erodes resources of financial institutions. Institutional credit for rice production in the Philippines ranges from 7 to 14% interest per year. (49) Co-operative banks in Pakistan extended credit from 0 percent to 10 percent rates of interest. Nearly 50 percent of the co-operative credit was extended at 4 percent rate of interest. Agricultural credit constituted three-fourths of the total co-operative credit extended in Pakistan.(74) In 1970, interest rates in India on institutional agricultural credit ranged from

3.5 to 10 percent. Brazil is known for its negative effective rates of interest resulting from low nominal interest rates and high rates of inflation. (2)

The result of such low interest rates on demand for credit is difficult to assess because of its interaction with numerous other factors. Pani's estimate for India ascertains that reduction in the average rate of interest by one percent, other factors remaining constant, is associated with an increase in credit borrowed by 43 percent (58). On the contrary, Ray has concluded that a good part of the demand for credit by small farmers in India is interest inelastic.(64) In Chile, Nisbet also found that "the borrower's demand for credit is interest inelastic". 10/ Recent research by the University of Vicosa and the Ohio State University has found the interest elasticity of the demand for agricultural credit to be very low. (85) Thus the limited evidence seems to indicate that by and large demand for credit may be interest inelastic.

The interest rates charged by non-institutional sources are usually much higher, highly variable, and often difficult to compare with those for institutional credit since the former are given on different terms. However, there is evidence to suggest that when innovations are proved to be particularly profitable, non-institutional credit even at high interest rates is used for productive purposes. (6) This is true of small farmers who have limited access to institutional credit. It would appear, therefore, that it is not so much the cost of credit per se as its relation to the profitability of investment which influences demand for credit.

As has been discussed earlier, small and large farmers may also experience different profitability because of differential access to extension and to medium and long term credit which influences the degree of uncertainty in adopting new innovations. It is possible, therefore, that under high risk conditions, demand for credit by small farmers is somewhat more responsive to changing cost of credit than that by large farmers. An argument for low interest rates on institutional credit is thus often made in terms of its effect on the rate of diffusion of innovations to small farmers over time. (17,68)

In identifying the difference in the response of small and large farmers to changing interest rates on borrowing, it is often difficult to distinguish between the effect of economic and non-economic factors. Large farmers borrow heavily from credit institutions, despite their own relatively high rates of savings. This is because of both low interest rates on lending and easier access to credit. It is not precisely known as to the extent to which institutional credit substitutes for their domestic savings and the extent to which it increases the overall rate of capital formation. However, evidence indicates that availability of easy, low cost agricultural credit, combined with lack of alternate institutional or investment opportunities discourages large farmers from realising their saving potential. (6,16,64)

The knowledge about supply elasticity of overall savings with respect to changing interest rates is not much more extensive compared to that about demand factors. Nevertheless, it is evident that low interest rates on savings deposits have by and large an adverse effect

on mobilizing savings. Rao and Adams indicate that in Brazil, low degree of institutional savings in the agricultural sector is partly a function of low rates of interest. (2,61) Brazil's ratio of time deposits to domestic credit claims on private sector was 0.08 in 1960 and increased to 0.13 in 1968. The ratio in the U.S. is 0.90 and that in Taiwan almost unity. A significant increase in the ratio of voluntary institutional savings to domestic credit is noted in South Korea and Vietnam as a result of increase in interest rates. (2,61) Recently, there has also been a substantial increase in deposits in Punjab in India. Little is known as to the extent to which the increase in bank deposits is related to changes in interest rates. The Green Revolution in Punjab has increased agricultural incomes and savings significantly.

From the above discussion, it is evident that the demand for credit is a function of numerous factors of which interest rates are only one element. Return on investment, risk and accessibility to credit institutions are other important factors. It is also evident that cost of borrowing credit by itself may not significantly retard or accelerate demand for credit by small farmers. Low interest rates on savings, however, do affect both the internal and institutional supply of savings adversely.

It is apparent that, by and large, an important guideline in determining levels of interest rates must be the cost of mobilising and distributing credit in relation to profitability of investment. The question of what components to include in estimating costs of credit distribution is a difficult and arbitrary one. Unit costs of

administering credit, particularly supervised credit, to small farmers are relatively higher than those for large farmers. (11) However, if defaults are considered to be a cost of distributing credit, these costs may often be higher in case of large as compared to small farmers. The balancing effect of these compensating factors will obviously vary significantly from one situation to another. It will have considerable implications for interest rates.

To increase agricultural production rapidly with its broad-based distribution may involve not low cost credit; but rather a guaranteed supply of credit to a large section of agricultural population, particularly including small farmers. If technical innovations are highly profitable, it is possible that such credit may be extended at interest rates which require little or no subsidy in the long run. This is partly because profitability of innovations improves the ability of the small farmer to pay interest costs. It is also because when innovations are profitable, rate of adoption is often much higher than has been traditionally expected. The latter reduces long run average costs of credit distribution and increases repayment rate. (8,68)

Factors Affecting Distribution of Credit

Problems involving distribution of production credit to different classes of farmers and expansion of credit particularly to small farmers vary significantly in LDC's. Some are simply procedural and some administrative. Some are a result of resource constraints and still others of a lack of overall institutional development. They can almost never be solved simply by creation of credit institutions. An

understanding of these factors is of considerable importance for devising appropriate measures for credit expansion.

In many LDC's manpower constraint provides a major limitation on extension of credit machinery to processing and recovering loans from a large number of small farmers. Such an administrative constraint is particularly severe in many African countries. Thus, in Tanzania with a considerable effort to expand institutional credit to small farmers, "only one-fourth of one percent of the nation's farmers could be reached in 1962. As the burden began to tell on the implementation machinery, and recovery problems became apparent, coverage fell from even this modest level. . . . funds were channelled to already commercial operators". (11)

Often inability of the small farmer to benefit from institutional credit arises from the criterion of creditworthiness adopted in extension of credit. In India, because creditworthiness is closely linked with landholding, medium and long term loans from co-operatives and land development banks go mainly to large farmers. (30,38,62) This is despite the fact that productive assets prior to extension of credit, show a negative relationship with the size of holding. (62)

Unequal distribution of credit is also caused by the concentration of political and economic power in the hands of large farmers. It allows large farmers to have a special access to credit institutions, thus rationing credit in their favour. Importance of asset holding as a criterion of creditworthiness, however, depends on the stage of agricultural development of a country and the associated structure of short and long term credit.

The relation of holding size to creditworthiness is somewhat less important in smallholder cultivation in many parts of Africa compared to the Asian countries. Where there is communal ownership of land, as in some parts of Africa, size of holding is not a criterion of creditworthiness. It is also because agriculture in many parts of Africa is still not at a stage where medium and long term investments in agriculture for improvement of land and other capital formation are yet significant. More often, investments are required for landclearing, which is organized through special public policy. Extension of credit to small holders is largely for working capital to improve yields through input of fertilizer, seed, insecticide, etc. The relatively lesser importance of medium and long term capital in Africa at this stage is also a result of relatively lower land pressure compared to many parts of Asia. With development of the agricultural sector, increased land settlement and greater exploitation of land through growing population pressure, capital formation will become increasingly important in increasing land productivity. Importance of landholding as a determinant of capital formation will also increase unless proper policies are pursued from this early stage.

The present different factor endowments in Africa and Asia, however, require special attention to credit policies suited particularly to the needs of their agricultural sectors. In many parts of Africa, because of greater incidence of seasonal labor shortages, selective mechanization is often more justified than in Asia. However, special problems are encountered in providing credit to small holder cultivation for mechanization where holdings are fragmented, scattered and often do not justify private ownership of heavy machinery. In such cases, success of the

credit programs is linked with developing new institutions which will provide the related production services. This may either involve pooling of cultivating units or simply of the related services or both, so as to allow economies of scale in the distribution and use of inputs. Mechanization, thus, has a direct bearing on administration of a credit program or, alternatively, on production organization to be pursued if incomes of small holders are to grow. The trade-offs between policies of changing production organization or evolving private or public institutions to service needs of small holder cultivation must be given a special consideration. The credit problem in many parts of Africa is, thus, that of creating new institutions where none have existed before. Compared to the Asian countries, it, therefore, hinges strongly on the proposed organization of the agricultural sector. Its success will largely depend on availability of manpower to plan and administer these various policies.

One of the variants of creditworthiness often used for short term credit, is downpayment. It hinders distribution of credit to the very small farmers. Often, however little the downpayment, the poorest of the small farmers simply cannot produce the necessary cash and, therefore, is ineligible for receiving credit. The relationship of downpayment to performance in repayment is not well established. Where innovations have proved to be profitable, difficulties in recovering credit are surmounted relatively easily. Besides, often it is no more difficult to recover all the credit from a farmer than it is to recover a major portion of it.

Yet another requirement for receiving credit is a proof of ownership or of security of land tenure. Because of illiteracy, poor bargaining position and general inability to provide contractual evidence, this

requisite also works mostly against the small farmer. Prof. Dantwala has summarized the situation in India very aptly . . . "what is needed most is the active collaboration of State agencies at the district, taluko and village levels with the lending institutions in the implementation of development projects. Half-a-dozen documents - No-encumbrance certificate, no due certificate, record of rights, possession certificate, etc. - have to be obtained before a bank loan can be sanctioned. And where land records are not brought up to date, this becomes a very frustrating task". (14)

The nature of the credit policies and the means of channelling credit thus have to be highly flexible and different depending on the institutional base from which to begin, the nature of production for which credit is to be extended and the stage of development of the agricultural sectors. The problem of extending credit to small farmers is complex and linked with a number of other factors which must be tackled simultaneously. In terms of organization and manpower the credit to small farmers thus makes heavier demands than lending to large farmers. However, in most LDC's the employment problem must first be tackled in the agricultural sector if it is to be prevented from migrating to the rest of the economy. Immediate attention must, therefore, be given to the problems of small farmer credit extension. Small farmer credit programs must emphasize flexibility in the use of credit channels and in lending policies.

Policies for Expanding the Agricultural Credit System

Credit Channels: There is considerable need either to develop new credit institutions or to use existing institutions specifically to meet the needs of the small farmer. To be effective, small farmer credit

institutions should ideally (a) devise specially flexible lending procedures, (b) adequately appraise the credit needs of the farmer so as to assure repayment, (c) provide timely credit and inputs, (d) be accompanied by, but not necessarily integrated with, a proper extension and marketing service, and (e) have an effective mechanism for collecting dues from farmers. Given the magnitude of the poverty problem in the agricultural sector of the LDC's, every effort must be made to reach as many of these policy requirements, through as many alternative credit channels as possible. Special smallholder agencies may be created to achieve some or all of these features, as in the case of the Small Farmer Development Agency in India. Credit programs may specifically be designed for the small farmer, as in case of the minimum package program in Ethiopia.

In countries where private trading and processing systems are well developed and reasonably efficient, it may be highly desirable to combine the activities of the traditional marketing systems with channeling credit and inputs into the agricultural sector. These will not only relieve the excessive administrative burden placed on the scant co-operative and government resources, but will also provide a healthy competition to these institutions, which is so essential for maintaining efficiency in the distribution system.

The traditional trading channels are often particularly accessible to the small farmer. They can be more effective in reducing bureaucratic red tape and in providing a flexible approach to repayment. They often have well developed information systems on which to build credit

and input distribution. Once innovations have been proved to be successful, traditional sources of credit may play a particularly significant role in channelling considerable amount of credit and inputs into the agricultural sector.

The private trading systems are often much less developed in many parts of Africa, compared to their Asian counterparts. However, because of their considerable manpower constraint, African countries may achieve faster credit expansion if they use the traditional trading systems as one of the channels for credit distribution.

Commercial Banks may also play a significant role in channelling credit to small farmers. Within institutional lending programs, Brazil is somewhat unique where private commercial banks account for as high as 35 to 45 percent of the agricultural credit extended by the institutional sector, compared to 3 percent in Japan (1961), 11 percent in Venezuela (1960), 8 percent in the Philippines (1957), and 0 percent in India (1961).(2) It is quite possible, however, that without a considerable government regulation of credit, commercial banks may supply credit mainly to the large farmers.11/ However, this will release considerable supply of finance and manpower from government and co-operative agencies to make credit available to the small farmer.

Development of cash crops has often been undertaken through multi-purpose, independent agencies, which follow an integrated approach of extension, credit, input and output marketing. African countries provide numerous successful examples of such an approach in the development of their cash crops. It is worthwhile examining the extent to which the procedures of an integrated commodity approach to agricultural development may have a broader applicability in developing production of

subsistence crops and in reducing cost of credit distribution to small farmers.

Lending Procedures: There is considerable need for flexibility in developing procedures for credit distribution, if credit policies are not to reinforce the vicious circle of poverty. The numerous criteria of creditworthiness, discussed earlier, have a bias built in favor of the large farmer. There is not only considerable scope but a significant need for emphasis on potential cash flows of income in extending credit. The cash flows can be augmented only by improving the various credit related agricultural policies.

Waiver of downpayment and asset holding as criterion of creditworthiness, however, assume that credit will, in fact, be successful in generation of additional income and that it can be recovered in the form of repayment. It, therefore, implies availability of technology, proper extension, careful examination of eligibility and an adequate supervision of use of credit, more than currently exist in most credit programs. It will also require stricter sanctions against misuse or default of funds and an adequate return to marketing the produce.

An additional problem facing credit institutions is that of providing a steady cash flow to the agencies at the lowest level, for timely provision of inputs and purchases of output. A high degree of centralization in decision making combined with inadequate checks and measures for discouraging misuse of funds are two major problems facing effectiveness of credit institutions. Where credit facilities are integrated with an inefficient input and/or output marketing system opportunities for misuse of funds are large.

Factors related to development of an efficient agricultural credit system thus require proper organization and effective implementation of numerous functions encompassing the agricultural sector as a whole.

IV. MARKETING: PERFORMANCE, PROBLEMS AND POLICIES

The organization of the indigenous marketing systems shows a wide variability in LDC's. For evaluating their performance these indigenous systems are categorized into privately, co-operatively and publicly-managed systems.

Private Marketing Systems

An impressive body of statistical evidence has accumulated which indicates that contrary to general belief, the private marketing systems in LDC's are, by and large, highly competitive and operate efficiently given the conditions in which they function. (4,9,12,19,22,24,25,29,31, 34,35,45,53,77,82) On the average, regional and seasonal price disparities are generally not greater than transport and storage costs. Regional disparities are often more apparent than real and are caused by comparison of prices that are not strictly comparable in terms of their variety and grade specifications. (45) Real regional disparities that do occur, often result from movement restrictions and poor transport and communications facilities. Seasonal price movements are significantly variable from one year to another, and prices in the post harvest period, when most of the surplus is marketed, are generally low. The heavy marketings immediately after the harvest arise from a combination of factors, such as the farmer's need for cash for payment of taxes, wages, etc., lack of credit facilities to meet these cash needs and

inadequate storage facilities on farms. Nevertheless, the post harvest price rise is on an average not larger than storage costs. The variability in the seasonal price patterns occurs because of the unpredictable nature of the production fluctuations and poor forecasting and market information systems. The seasonal price variations are sometimes exacerbated by the unpredictable nature of the Government intervention, which may cause speculative action and stock piling, when in fact, intervention is meant for stabilizing prices. (45)

Autonomous and Semiautonomous Marketing Systems

LDC's have a long history of governmental intervention in private trade. Numerous factors explain this phenomenon. First, although private trade operates relatively efficiently in normal years, in times of food shortages free markets have a tendency to siphon marketable surplus from countryside into large urban centres, from low to high purchasing power regions, causing considerable inequity in the distribution of food supplies. Second, in periods of shortages, in absence of intervention, free markets cause high food prices in urban centres affecting industrial wages; on the other hand, in times of surpluses prices may drop precipitously, causing a disincentive to the farmer to grow the crop. Government intervention in agricultural marketing has, therefore, often been closely linked with price stabilization and food distribution policies.

In many parts of Africa, marketing boards, i.e. autonomous or semi-autonomous centrally-managed purchasing agencies have emerged to handle procurement and processing of crops for export. (4,9,34) These were often established because of the contention that indigenous marketing systems could not handle export trade. Marketing boards have also been

extended to handle subsistence crops. Kenya had 27 such marketing boards in 1960. Tanzania had 12 commodity boards in 1966.

With a few exceptions, co-operative marketing agencies in most LDC's have been imposed from outside rather than emerging from within the agricultural sector. (28) These are most often introduced with the announced intention of increasing the farmer's share in the consumer's price and of releasing the farmer from the exploitation of the money-lender and the trader.

Co-operative marketing is also often introduced as a component of an integrated approach to crop production so as to assure timely supply of inputs and a stable price for outputs.

Marketing co-operatives in LDC's have at times become a powerful instrument of socio-political change. Thus, cotton marketing co-operatives in Sukumaland effectively replaced the alien private trading systems. They also became an important medium for Tanzania's aspirations of political independence. (40,47)

Distributional efficiency of a publicly or co-operatively managed market system may be compared with private trade where these operate side by side. Evaluation of the relative performance of the various systems shows that costs of distribution tend to be almost always lower under a free market system.12/ In case of government marketing agencies, the management costs have often tended to be high as a result of maintenance of large permanent salaried staff. High costs in government marketing also often result from less careful handling of commodities in storage and transport than usually exists under private trade. This causes large quantitative and qualitative losses. Public sector

extended to handle subsistence crops. Kenya had 27 such marketing boards in 1960. Tanzania had 12 commodity boards in 1966.

With a few exceptions, co-operative marketing agencies in most LDC's have been imposed from outside rather than emerging from within the agricultural sector. (28) These are most often introduced with the announced intention of increasing the farmer's share in the consumer's price and of releasing the farmer from the exploitation of the money-lender and the trader.

Co-operative marketing is also often introduced as a component of an integrated approach to crop production so as to assure timely supply of inputs and a stable price for outputs.

Marketing co-operatives in LDC's have at times become a powerful instrument of socio-political change. Thus, cotton marketing co-operatives in Sukumaland effectively replaced the alien private trading systems. They also became an important medium for Tanzania's aspirations of political independence. (40,47)

Distributional efficiency of a publicly or co-operatively managed market system may be compared with private trade where these operate side by side. Evaluation of the relative performance of the various systems shows that costs of distribution tend to be almost always lower under a free market system.12/ In case of government marketing agencies, the management costs have often tended to be high as a result of maintenance of large permanent salaried staff. High costs in government marketing also often result from less careful handling of commodities in storage and transport than usually exists under private trade. This causes large quantitative and qualitative losses. Public sector

marketing and processing facilities are often also highly capital intensive and frequently under-utilized, leading to high costs of operation. (9,44,56)

Despite the relatively high costs of their operations, public marketing systems have performed a useful function of procuring cash crops. In some cases public marketing facilities have provided a particular impetus to increasing cash crop production by small holders.

The failure of the publicly managed marketing agencies has been greatest in handling highly dispersed, small marketable surpluses of subsistence crops. When food production is in short supply, free market prices almost always tend to be higher than those fixed by the government, creating considerable difficulty in procuring grain on government account. (21,45) Most government agencies lack the administrative structure required to purchase a significant portion of the marketed surplus at low fixed prices to make an impact on the market price. Thus, often government corporations dealing in grain depend heavily on imported supplies for distribution during periods of shortages. (45) On the other hand, prices are sometimes fixed high enough to ease procurement and to increase production. When combined with technological change, incentive prices have often resulted in inbalances in domestic supplies. Because of the pressure group politics that has emanated from price policies in many LDC's, it has often become difficult to change agricultural price policies so as to reallocate resources for a balanced increase in production. Where publicly managed market systems have attempted to eliminate the price

risk by replacing or preempting the traditional market structure through market operations, these have disrupted traditional channels of marketing in subsistence crops. They have, however, failed to create satisfactory, alternate, nationally integrated market systems. (9,31,45,55) Thus, although price stabilization may be effective in case of individual crops, its effect on the allocation of overall resources in the agricultural sectors of the LDC's is often neglected in price stabilization programs. (78)

Co-operative Marketing Systems

Evaluation of economic efficiency of the co-operative marketing systems has been extremely limited. However, the existing evidence indicates that in distributional efficiency, performance of marketing co-operatives has not been very dissimilar to that of government agencies in most LDC's.

Where marketing co-operatives have been competing with the private sector, they have by and large not been successful in undercutting the distribution costs of the free market. (44) However, success of co-operative marketing agencies must be guaged in terms other than simply minimization of distribution costs. By extending their coverage co-operatives, in some cases, have boosted production of certain commodities. (40) In others, as in Tanzania, they have provided an effective alternative to the private market system that was considered to be socially and politically oppressive. (47)

The economically self-sustaining co-operatives have by and large been confined to marketing of commercial crops - reflecting the commercial

mindedness of the farmers producing cash crops. In India marketing co-operatives have been most successful in case of commercial crops such as oil seeds and sugarcane. Success of marketing co-operatives in handling cash crops is also explained by an important value-added component involved in processing as distinct from trading cash crops. (55) This distinction is often extremely important since trading in LDC's requires considerable skills and ability to bear risk, neither of which are easily found in most co-operatives at initial stages. The necessity of processing and, therefore, the scope for bulk handling in case of cash crops often facilitates economies of scale in processing. This explains the success of co-operatives in handling cash crops in cases where the co-operatives have been able to handle large portions of market supplies.

In some cases, marketing co-operatives have been viable when these are integrated with credit distribution; and when an effective procedure for collecting debts from market proceeds has been devised. This has been successfully tried in small holder tobacco and cotton schemes in Tanzania and tea production in Kenya. This latter has been easier in cases of cash crops as compared to subsistence crops.

The organization and administration of co-operatives is crucial in their viability. Thus, where farmers have been mobilized behind a social or a political cause, co-operatives have been more successful. (47) They have also worked somewhat more efficiently where distribution of assets is equitable and where power of individual members based on caste, class or tribal factors is relatively insignificant. (46,83) In both

these cases, marketing co-operatives have shown greater emphasis on efficiency, greater loyalty to the co-operative as against individual gain and, consequently, good management. Such success of co-operatives can often be explained by the leadership of a single individual. (26,63,66)

Successful co-operatives even when defined in this broad context, as distinct from simply in efficiency terms, are, however, more an exception than a general rule. By and large marketing co-operatives have failed either to reduce market margins or to handle a significant volume of the small surpluses of subsistence farmers. This is particularly true in case of food crops. Most co-operatives suffer from poor government supervision and guidance, patronage politics and fraudulent behaviour of their powerful members. They remain government initiated marketing agencies, a politician's paradise, highly subsidized financially as well as in scarce trained manpower. Often performance of the existing co-operatives has been a disincentive in mobilizing farmers' further participation in co-operative activities.

Active participation of farmers in co-operatives is complexly determined by socio-political and cultural as well as economic factors. For this no universal formula can easily be produced. It is apparent, however, that the farmers' interest in co-operatives will be substantial if the traditional market system is, in fact, as oppressive as generally believed. Their stake in active participation will increase with increase in their marketed surpluses. Their willingness to participate will increase only if the co-operatives can effectively reduce the farmer's dependence on the moneylender-trader by handling the skilled trading function efficiently. This latter is particularly difficult

in a traditional agricultural sector where risks and uncertainties are high because of the numerous constraints provided by the poor infrastructure and poor market information system. The task of the co-operative marketing agencies will thus be simplified only when the entrepreneurial function is reduced in importance by removing the constraints imposed by poor infrastructure and institutions on marketing in LDC's.

Marketing co-operatives must also receive considerable guidance in administration at initial stages of formation. Most developing countries face a particular constraint in this regard.

In summary, it must be recognized, therefore, that co-operatives may work more effectively in case of some crops than others. They may be more successful at one stage of agricultural development than another. They may be particularly suited to one set of socio-economic and political conditions than another. In any case self-sustaining marketing co-operatives, as a significant force, will take a long time to emerge. In the meantime, often economic efficiency must be sacrificed for broader socio-political objectives. National marketing policies will hopefully be determined on the basis of an objective evaluation of real, as distinct from apparent, costs and benefits involved in these complex choices.

Policies for Expanding and Improving the Market System

The goal of the market system must be to minimize costs of distribution, to reduce spatial and seasonal price fluctuations and to handle efficiently the increased marketable surpluses emanating from expanding

production. These functions must be organized within two major constraints faced by the developing countries, namely capital and skilled manpower. A market organization must, therefore, make use of whatever local skills that exist and minimize use of the limited supply of administrative manpower.

A market system must also maximize use of the investment that may already have been made in trading. Such capital is often substantial in the private trading systems of LDC's. To be effective, a market system must also reach a large number of farmers. A market organization that fails to do so, however well conceived, will not serve the purpose, either of reducing overall marketing margins or of providing an incentive price to boost agricultural production generally. If the proportion of total marketed surplus handled by co-operatives and/or government agencies is taken as an index of their effectiveness in reaching a mass of small farmers, administered market agencies have particularly failed in this regard.

An overemphasis on forms of market organization as a way of solving the marketing problem has diverted attention from removing the more basic constraints which reduce efficiency in the market system in the LDC's. Inefficiencies arise from poor transport, storage and processing facilities, poor market information systems, lack of standardization of weights and measures and inadequate and poorly administered banking and credit facilities. Often provision of credit, market intelligence and storage facilities may improve a cultivator's bargaining position more effectively than simply introduction of a new form of

market organization that does not function. Improvement of transport facilities may reduce price differences more effectively than replacing an existing trading system. Absence of these market facilities places a particularly great premium on trading skills and entrepreneurial abilities in performing the marketing function. The efficiency of any market system, whether private, public or co-operative, can not be increased unless the risk and uncertainty in marketing can be reduced by removing these basic constraints. This applies even more to the success of the public and co-operative as compared to the private system since entrepreneurial decision making is often lacking in the first two.

Often the emphasis in improving marketing facilities such as storage and processing facilities in LDC's has been on introducing technology and scale of operations, not particularly suited to the managerial and technical skills of the local manpower. (44) The capital intensity in marketing facilities is often greatest when such facilities are built in the public and/or the co-operative sector. (45) This not only reduces economic efficiency of a market organization, but also adversely affects employment generation in the service sector. Where a well working private trading system exists, there is often a greater scope for emphasis on gradual improvement in market facilities to cope with manpower, institutional and financial constraints. The nature of these investments in market modernization has a particularly strong bearing on distributional efficiency.

To summarize, the emphasis in improving market efficiency must remain on widening choices open to the farmer and on improving his

decision making ability by improving physical and institutional infrastructure that cause inefficiencies. This approach is obviously less tangible and, therefore, less attractive to policy makers than the policies usually recommended which simply emphasize forms of organization and ignore the factors essential for their success. It is, however, the most effective way of fostering suitable forms of market organization.

1. Farm management studies in India show that land constituted between 68 and 85% of the total investment on typical farms in various states in India; see John W. Mellor, Economics of Agricultural Development, Cornell University Press, Ithaca, N.Y., 1966, Table 25, p.312, (49).
   An analysis of the increase in India's foodgrain output during 1951 to 1961 shows that of that total increase during the first two plans, about two-thirds is explained by the increase in land under cultivation and commensurate increase in labor availability. See John W. Mellor and Uma J. Lele, "Alternative Estimates of the Trend in Indian Foodgrains Production during the First Two Plans", Economic Development and Cultural Change, vol. XIII, No.2, January 1965, p.231 (50).

2. Unpublished sources.

3. Quoted in Adams, D.W. (2, p.16).

4. From Statistical Statements Relating to the Co-operative Movement in India 1969-70, Part I, Credit Societies, Agricultural Credit Department, Reserve Bank of India, Bombay, 1971, p.v. Quoted in M.L. Dantwala (13).

5. These figures depend on the concept that one uses. For example, Tripathy and Samuel (77) found that in one farm size group (0-5 acres) the net returns of the traditional varieties of paddy in Sambalpur in Orissa in India were Rs.10.16 per acre compared with net returns of Rs.358.89 per acre for the High Yielding Varieties.

6. See Ajeya Ray (63); Schluter (67) shows that borrowed funds as percent of cash expenditure are greater in the case of small farmers who adopt new technology when compared with larger farmers, indicating greater dependence on credit.

7. For example, in a survey of land development bank loans in Bilaspur and Ratlam districts of Madhya Pradesh in India it was found that 59.18% was diverted for purposes other than those provided for (7). Of the loans from land mortgage banks in Assam (120 borrowers surveyed in two districts), 41% of the borrowers diverted 21% of the loans for other purposes (66). Of the loans advanced in the Indore district of Madhya Pradesh from 1963-64 to 1969-70, 47% of the total loan was utilized by the members for the intended purpose, while 53% was utilized for other purposes, mostly unproductive (72).

8. Unpublished data.

9. Evidence on Ethiopia from unpublished sources.

10. Nisbet, Charles, "Interest Rates and Imperfect Competition in the Informal Markets of Rural Chile", Economic Development and Cultural Change, Vol.16, No. 1, Oct. 1967, quoted in B.P. Rao (60), p.22.

11. Rao (60) concluded from studies in Southern Brazil that a large proportion of institutional loans goes to the relatively large farmers. White and Rocha (82) found that state and private banks operations were concentrated among farms with more than 100 hectares (9% of the farming businesses).

12. The reports of the Agricultural Prices Commission in India, indicate that government procurement of grain had failed to reduce market margins. (45, pp.6-7) Several studies of the African marketing systems reach a similar conclusion (4,9,34,53).

BIBLIOGRAPHY

1. Abbot, J.C., "The Development of Marketing Institutions", pp.364-398 in Southworth and Johnston (eds.), Agricultural Development and Economic Growth, Cornell University Press, Ithaca, N.Y., 1967.

2. Adams, Dale W., Agricultural Credit in Latin America: External Funding Policy, Occasional Paper No. 9, Ohio State University, April 1970, mimeo.

3. Advisory Committee on Overseas Development, Farmer Co-operatives in Developing Countries, Washington, D.C., October 1971.

4. Alvis, V.Q., and Temu, P.E., "Marketing Selected Staple Foodstuffs in Kenya", Department of Agricultural Economics and Office of International Programs, West Virginia University, Morgantown, IP-25, March 1968,

5. Apte, S.G., "Co-operative agricultural credit - some disquieting trends", paper, Indian Journal of Agricultural Economics, Vol. 26, No. 4, Oct.-Dec. 1971, pp. 581-582.

6. Arunachalem, R.M.,"Credit and capital formation in the agricultural development of four Trichy villages, Madras State, India, 1962-1964,"Ph.D. dissertation Purdu University, 1966.

7. Athavale, M.C., J.P. Mishra and S.W. Bhave, "Loans advanced by land development banks - utilization, diversion and measures to prevent diversion", Indian Journal of Agricultural Economics, vol. 26, No. 4, p.575, Oct.-Dec. 1971.

8. Barker, Randolph, "The Economics of Rice Production", paper from the Department of Agricultural Economics, Rice Policy Conference, The International Rice Research Institute, May 9-14, 1971.

9. Bauer, P.T., West African Trade, Routledge and Kegan Paul, London, 1963.

10. Bhagwati, J.N. & Chakravarty, S.,"Contributions to Indian Economic Analysis," Supplement to American Economic Review, LIX, 4, Sept. 1969, pp. 2-73.

11. Collinson, M., "Tanzania's Co-operative Movement and Farmers Credit in the 1960's", unpublished paper.

12. Cummings, R. Jr., Pricing Efficiency in the Indian Wheat Market, Impex, India, New Delhi, 1967.

13. Dantwala, M.L., "Preface to Volume of Background Papers", International Seminar on Comparative Experience of Agricultural Development in Developing Countries since World War II, October 1971.

14. Dantwala, M.L., Address given to the Fourth Annual General Meeting of the Agricultural Finance Corporation Limited, 16th June, 1972.

15. Davis, L. Harlan; L. Bettis; and D.W. Adams, "Is Inexpensive Credit a Bargain for Small Farmers? The Recent Brazil Case", mimeo., Nov. 1971.

16. Desai, B.M., "Level and pattern of investment in agriculture: a micro cross-section analysis of a progressive and a backward area in Central Gujarat", Indian Journal of Agricultural Economics, Vol. 24, No. 4, Oct.-Dec. 1969, pp. 70-79.

17. Desai, B.M., and D.K. Desai, "Is Inadequacy of institutional credit a problem in changing agriculture?", Economic and Political Weekly, Review of Agriculture, September 26, 1970, pp. A-101 - 110.

18. Desai, O.M., "Growth of fertilizer use in Indian agriculture - past trends and future demand," Cornell International Agricultural Development Bulletin 18, 1970.

19. Dewey, Alice G., Peasant Marketing in Java, Free Press of Glencoe, New York, 1962.

20. Erven, B.L., "An economic analysis of agricultural credit use and policy problems, Rio Grande do Sul, Brazil", Ph.D. dissertation, University of Wisconsin, 1967.

21. Farruk, M.O., "The structure and performance of the rice marketing system in East Pakistan", Occasional Paper No. 31, USAID Prices Research Project, Department of Agricultural Economics, Cornell University, June 1970.

22. Galbraith, J.K. & Holton, R.H., Marketing Efficiency in Puerto Rico, Harvard University Press, Cambridge, Mass., 1955.

23. Ghosh, M.G., "Investment behavior of traditional and 'modern' farm - a comparative study", Indian Journal of Agricultural Economics, Vol. 24, No. 4, 1969, p. 80.

24. Hermann, L.F., Considerations Relating to Agricultural Price Policy in India, with Special Reference to Rice and other Foodgrains, Report to the Government of India, Ministry of Food and Agriculture, 1964.

25. Hirsch, L., Marketing in an Underdeveloped Economy: The North Indian Sugar Industry, Prentice Hall, Englewood Cliffs, N.J., 1961.

26. Hussain, M.A., "A Field Investigation into the Management of Village Co-operatives in Comilla Experimental Area", 1965. Mimeographed.

27. Jain, H.C., "Growth and recent trends in the institutional credit in India", paper, Indian Journal of Agricultural Economics, Vol. 26, No. 4, Oct.-Dec. 1971, p. 555.

28. Jakhade, V.M., and M.V. Gadgil, "How to Assess the Repayment Capacity of Cultivators?", Economics Department, Reserve Bank of India, Bombay, 1970. Mimeographed.

29. Jasdanwalla, A., Marketing Efficiency in Indian Agriculture, Allied Publishers, Bombay, 1966.

30. Jodha, N.S., "Land-based credit policies and investment prospects for small farmers", Economic and Political Weekly, Review of Agriculture, September 1971, p. A-143 - 148.

31. Jones, W.O., "Measuring the Effectiveness of Agricultural Marketing in Contributing to Economic Development: Some African Examples", Food Research Institute Studies on Agricultural Economics, Trade and Development, Vol. IX, No.3, 1970, pp. 175-196.

32. Khalid, A.S., "Statutory agricultural credit agencies in Pakistan", Economic Journal, Vol. II, No.2, July 1969, pp. 189 - 210.

33. Khusro, A.M., "Returns to Scale in Indian Agriculture", Indian Journal of Agricultural Economics, Vol. 19, Oct.-Dec. 1964, pp. 51-80.

34. Kriesel, H.C., Laurent, C.K., Halpern, C., and Larzelere, H.E., "Agricultural Marketing in Tanzania; Background Research and Policy Proposals", Michigan State University/USAID, June 1970.

35. Kulkarni, A.P., "The Behavior of Prices of Groundnut Pods in Some Regulated Markets in Maharashtra," Ph.D. dissertation, University of Poona, 1962.

36. Ladejinsky, Wolf, "A Note on Institutional Problems", New Delhi, 1969, mimeo.

37. Ladejinsky, Wolf, "The Green Revolution in Punjab: A Field Trip", Economic and Political Weekly, Vol. IV, No. 26, June 28, 1969.

38. Lal, Deepak, "Agricultural development in Maharashtra - some aspects", Economic and Political Weekly, Review of Agriculture, December 1969, pp. A-207 - A-210.

39. Lamade, W., "Marketing Boards in Tanzania", Z. ausi, Landw. Frankfurt a.M. vol. 7, No. 4, 1968, pp. 334-348.

40. Laurent, C.K. "Cotton Marketing in Tanzania", unpublished paper.

41. Lee, T.H., Intersectoral Capital Flows in the Economic Development of Taiwan, 1895-1960, Cornell University Press, Ithaca, N.Y., 1971.

42. Lele, Uma J., and J.W. Mellor, "Estimates of change and causes of change in foodgrains production in India 1949-50 to 1960-61," Cornell Int. Ag. Development Bulletin No. 2, August 1964.

43. Lele, Uma J., "Working of grain markets in selected states, India, 1955-56 to 1964-65", Occasional Paper 12, Dept. of Agricultural Economics, Cornell University, USAID Prices Research Contract, December 1968.

44. Lele, Uma J., "The Modern Rice Mill in India", Occasional Paper No. 49, USAID-Employment and Income Distribution Project, Department of Agricultural Economics, Cornell University.

45. Lele, Uma J., Food Grain Marketing in India: Private Performance and Public Policy, Cornell University Press, Ithaca, N.Y., 1971.

46. Long, Norman, "Co-operative Enterprise and Rural Development in Tanzania" in R.J. Apthorpe ed., Rural Institutions and Planned Change in Africa: Case Materials, Report No. 70-15, Geneva: United Nations Research Institute for Social Development, 1970.

47. Maguire, Gene Andrew, Toward "Uhuru" in Tanzania: the Politics of Participation, London, Cambridge University Press, 1969.

48. Mazundar, D., "Farm Size and Productivity", Economica, May 1965.

49. Mears, Leon A., and Meliza H. Agabin, "Finance and Credit associated with Rice Marketing in the Philippines", discussion Paper No. 71-15, Institute of Economic Development and Research, School of Economics, University of the Philippines, 17 August, 1971.

50. Mellor, J.W., The Economics of Agricultural Development, Cornell University Press, Ithaca, N.Y, 1966.

51. Mellor, J.W. and Lele, U.J., "Alternate Estimates of the Trend in Indian Foodgrains Production during the First Two Plans, Economic Development and Cultural Change, XIII, 2, January 1965, pp.217-232.

52. Misra and S.C. Mallick, "Factors influencing capital formation in agriculture", Indian Journal of Agricultural Economics, Vol. 24, No.4, Oct.-Dec. 1969, pp.93-105.

53. Murti, Ram, "Estimation of magnitude of credit needs of the farmers in Block Kalyanpur, Kanpur (U.P.)", Indian Journal of Agricultural Economics, Vol. 26, No.4, Oct.-Dec. 1971, pp.568-570.

54. Mutti, R.J. and Atere-Roberts, D.N. "Marketing of Staple Food Crops in Sierra Leone", University of Illinois, and Njala University College, University of Sierra Leone, AID Contract No. csd-801, March 1968.

55. National Co-operative Development Corporation, Marketing by the Farmer for the Farmer, The Gondals Press, New Delhi, January 1967.

56. Nightingale, Ray W., "The Modernization Decision in Indian Urban Fluid-Milk Markets", Cornell International Agricultural Development Bulletin 15, Ithaca, N.Y., August 6, 1969.

57. Ordono, A.V., "Agricultural Credit in the Land-Reform Areas", Economic Research Journal, Vol. 13, No. 4, March 1967, pp.245-257.

58. Oweis, Jiryis S., "Agricultural Credit Policy in Developing Countries", Bureau for Program and Policy Coordination, Agency for International Development, March 1972. Mimeographed.

59. Patel, Mahendra Lal, Agro-economic Survey of Tribal Mandla, People's Publishing House, Delhi, 1969, pp.29-42.

60. Rao, A.P., "Size of Holding and Productivity", Economic and Political Weekly, November 11,, 1968.

61. Rao, Bodepudi Prasada, "The Economics of Agricultural Credit-use in Southern Brazil", The Ohio State University, Ph.D. dissertation, 1970.

62. Rao, C.H. Hanumantha, "Farm Size and Credit Policy", Economic and Political Weekly, Review of Agriculture, December 1970, pp.A-157-162.

63. Raper, Arthur F., Rural Development in Action: The Comprehensive Experiment at Comilla, East Pakistan, Cornell University Press, Ithaca, N.Y., 1970.

64. Ray, Ajeya, "The Role of institutional finance in agricultural investments of the District of Burdwan in West Bengal -- a case study", Indian Journal of Agricultural Economics, Vol. 26, No. 4, Oct.-Dec. 1971, p.567.

65. Reserve Bank of India, Development of Co-operative Marketing: A Survey Report, Bombay, 1968. (Shri V.M. Jakhade, Adviser).

66. Rudra, A., "Farm Size and yield per acre", Economic and Political Weekly, July 19, 1968.

67. Saikia, P.D., "The Role of Land mortgage banks in agricultural development in Assam", Indian Journal of Agricultural Economics, Vol. 26 No. 4, 1971, pp. 574-575.

68. Schluter, Michael, "Differential rates of adoption of the new seed varieties in India: the problem of the small farm", Occasional Paper No. 47, Department of Agricultural Economics, Cornell University, USAID-Employment and Income Distribution Project, 1971.

69. Schluter, Michael and Richard Longhurst, "Suitability of the new technology for the small farm: high yielding rice and bajra in two districts in India", draft, June 1972. (To be published in Occasional Paper Series, Dept. of Agricultural Economics, Cornell University).

70. Schluter, Michael, and John W. Mellor, "New Seed Varieties and the Small Farm", Economic and Political Weekly, Review of Agriculture, March 25, 1972, pp. A-31 - A-38.

71. Shah, S.L., and L.R. Singh, "Capital formation in agriculture of the Tarai region of Uttar Pradesh", Indian Journal of Agricultural Economics, Vol. 24, No. 4, Oct.-Dec. 1969, pp.87-92.

72. Singh, H. and A.S. Kahlon, "A Study of credit requirements and advances to farmers in Patiala District", Indian Journal of Agricultural Economics, Vol. 26, No. 4, Oct.-Dec. 1971, pp. 496-503.

73. Sisodia, J.S., "Institutional credit for Agriculture in Indore District", Indian Journal of Agricultural Economics, Vol. 26, No. 4, Oct.-Dec. 1971, p.568.

74. State Bank of Pakistan, Statistics on Co-operative Banks, "Statement XVIII", Karachi, September 1970.

75. Subramanian, S.R., K. Ramamoorthy and S. Varadarajan, "Credit needs and availability to farmers", Indian Journal of Agricultural Economics, Vol. 26, No.4, Oct.-Dec. 1971, p.558.

76. Thoday, A.R., "Marketing of Staple Foods in Western Nigeria", Stanford Research Institute, Menlo Park, California, AID Contract AID/csd-801, 3 volumes, March 1968.

77. Thoday, A.R., "Marketing of Grains and Pulses in Ethiopia", Stanford Research Institute, SRI Project IV-6350, rep.no. 16, April, 1969.

78. Tomek, William C., "Stability for Primary Products: Means to What Ends?", Occasional Paper No. 28, USAID Prices Research Project, Department of Agricultural Economics, Cornell University, September 1969.

79. Tripathy, R.N., and B. Samuel, "Economics of high-yielding varieties in IADP: a study in Orissa", Economic and Political Weekly, October 25, 1969, pp. 1719-24.

80. Vasthoff, Josef, Small Farm Credit and Development: some experiences in East Africa with special reference to Kenya, IFO-Institut Fur Wirtschafts Forschung Munchen, Afrika-Studien nr. 32, Munchen, Welfforum-Verlag, 1968.

81. Vyas, V.S., "Rapporteur's Report on Institutional Finance for Agricultural Development", Indian Journal of Agricultural Economics, Vol. 23, No. 4, Oct.-Dec. 1968, pp. 1-7.

82. Weiss, Joseph S., "The Benefits of Broader Markets due to Feeder Roads and Market News: Northeast Brazil", Dissertation Series, No. 24, Latin American Studies Program, Cornell University, January, 1971.

83. Widstrand, C.G. edited, Co-operatives and Rural Development in East Africa, Africana Publishing Corporation, New York, N.Y., 1970.

84. Wharton, Clifton R. Jr., "The Green Revolution: Cornucopia or Pandora's Box?", Foreign Affairs, April 1969.

85. White, Jr., T. Kelley, and D.S. Rocha, Agricultural Credit in the Mata Zone of Minas Gerais, preliminary edition, Vicosa, Brazil, 1971.