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THE FINANCE OF THE ADDITIONAL CAPITAL REQUIRED FOR TECHNICAL CHANGE¹

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THE agricultural world is on the move. Change is the order of the day. In the State of Iowa we have fewer farmers than in 1940, employing less labour, but these farmers are producing at a rate 25 per cent. above 1940. In other States, in other countries, in fact throughout the world a technical revolution is under way in agriculture. Mechanization, electricity, fertilizers, improved seeds and sires, and better nutrition are prominent examples of the new techniques. And the end is not yet.

But change brings problems. One big problem is deciding which changes will be profitable and how to organize and operate under the new conditions. Another big problem is finance which means finding and administering the funds to make the desired changes.

Lenders have reason to be puzzled by the disturbing questions raised when new developments are proposed. Some individuals view a new technique as highly profitable and want to adopt it at once; others hold back with a 'wait and see' attitude; and still others vigorously oppose it.

Small wonder that technical change frequently comes slowly. It requires many decisions and large amounts of funds in most cases as, for example, in electrification and in switching from animal power to tractors and power-driven machinery. And the change is not always a sure thing; the first tractor, the new seed or fertilizer may turn out to be much less satisfactory than expected. Furthermore, these innovations may require new skills and adaptations to fit existing conditions. So the credit expert may be justified in studying with unusual care the application for credit of the farmer who wants to buy a new machine that will completely change existing practice. Similarly the credit committee examining a new irrigation or electrification proposal will probably encounter numerous baffling economic issues in addition to the question of finding a source of needed funds.

Our problem is to examine each of the important points involved

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in credit for technical change. Any country or agency interested in a farm credit programme designed to facilitate technical change might well consider these questions which I have consolidated into four major points as follows :

1. What are the sources of information on the experience of other countries in using credit for technical change?
2. What role should government play in getting a project started?
3. What kind of credit organization should be established?
4. Where and how should the funds be obtained?

I. *Some Sources of Information*

Fortunately, the country wanting to improve its farm credit system can find in the publications of recent years much helpful information. First we have the proceedings of a number of international and regional farm credit conferences. A significant one for our purpose was the International Conference on Agricultural and Co-operative Credit held at the University of California at Berkeley in 1952. The most useful publications from this Conference are the two volumes of proceedings, a summary report, and a selected list of readings.¹ Especially pertinent to our discussion are a number of papers in volume i of the *Proceedings*, notably, 'The Supply of Capital for Underdeveloped Countries' by John Kenneth Galbraith, 'New Sources of Capital for Agriculture' by Egbert de Vries, 'Relation of Foreign Loans to Agricultural Credit' by Bernard Bell, and 'Mobilization and Use of Domestic Capital in Relation to Agricultural Improvement' by Horace Belshaw. Anyone wanting a digest of the Berkeley Conference will find the Summary Report a labour-saving and stimulating review.

Other credit conferences have been held in various regions of the world such as the one in Guatemala in 1952 and the one in Lebanon in 1953. Conferences on land tenure, particularly the one at the University of Wisconsin in 1951, have useful sections on farm credit.

A comparative, country-by-country, survey of farm credit was published in 1954 under the title *Farm Credit Activities in Selected Countries with Reference to Credit Programs for Underdeveloped Countries*. This report, written by V. Webster Johnson and Edwin C. Johnson, was jointly sponsored by the Ford Foundation, the International

¹ Elizabeth K. Bauer, Ed., *Proceedings of the International Conference on Agricultural and Co-operative Credit*, 1952, Berkeley, California, University of California, 1952; Thomas C. Blaisdell, Jr., and others, *Farm Credit in Underdeveloped Areas*, A Summary Report of the International Conference on Agricultural and Co-operative Credit, Washington D.C., Foreign Operations Administration, 1953; Irving F. Davis, Jr., Ed., *Selected Readings in Agricultural Credit*, Berkeley, California, University of California, 1952.

Bank for Reconstruction and Development, the Foreign Operations Administration, and Harvard University. In addition to the individual country surveys, one large section is devoted to improved credit institutions for farmers.

Two other general studies have specific recommendations for a country endeavouring to revise or set up a new farm credit system. The first is *Agricultural Credit for Small Farmers* by Sir Bernard O. Binns.¹ This publication provides an excellent treatment of the problems encountered in reaching the farmer on a small acreage, a typical situation in many parts of Asia and in other parts of the world. The author writes in the foreword:

The opinions expressed are based largely on the personal experience of the writer, who from 1937 to 1945 made a close study of the credit situation in Burma in relation to the agrarian problems of that country and of agricultural credit arrangements in other countries. He was responsible for the framing of several agrarian enactments now in force in Burma including an act for the control of moneylenders and, as part of his duties in connection with post-war agricultural reconstruction, administered large issues of agricultural credit from government funds during 1946 and 1947.

The second general study, entitled *Agricultural Credit Aspects of Technical Co-operation*, was written by V. Webster Johnson and Russell C. Engberg.² The recommendations made by the authors are based on extensive on-the-spot studies of farm credit in different countries.

Another important source of information for the country embarking on a credit programme is the International Bank of Reconstruction and Development. This agency has made, on its own and in co-operation with other agencies, numerous reports on missions and investigations to determine the feasibility of international loans. Some of these reports, such as those on Uruguay, Chile, and Japan, apply specifically to agriculture.³

Many additional studies and sources of information are available. These include books and bulletins on credit and finance on the one

¹ F.A.O. Development Paper No. 16, Agriculture, Rome, Italy, Oct. 1952.

² Published by Mutual Security Agency, Washington, D.C., 28 July 1953 (processed).

³ *Agricultural Development of Uruguay, Report of a Mission sponsored by the International Bank for Reconstruction and Development and the Food and Agriculture Organization of the United Nations at the request of the Government of Uruguay*, Washington, D.C., and Rome, 1951; *The Agricultural Economy of Chile, Report of a Mission organized by the International Bank for Reconstruction and Development and the Food and Agriculture Organization of the United Nations at the request of the Government of the Republic of Chile*, Washington, D.C., and Rome, 1952; *International Bank for Reconstruction and Development, Present Position and Prospects of Agriculture in Japan*, Washington, D.C., 1955.

hand, and individual studies within different countries on the other. An example of an individual country study is a comprehensive research inquiry being made of farm credit in Venezuela by the Consejo de Bienestar Rural. In this study, in which the writer had an opportunity to participate in the planning stage, a questionnaire survey of over 3,400 representative farmers was made in 1953-4 in all the major agricultural areas of the country.

II. *What Role should Government play?*

Government's role in farm credit for technical change depends on the industrial development of the country and the available funds for agricultural investment. An under-developed agricultural economy will probably look to government for all phases of credit assistance, while agriculture in an industrialized country may make relatively few demands on government.

But we are dealing with credit for technical change, not with routine operating credit. Accordingly, we may find that government is drawn into credit projects even in highly developed areas. Technical change involves decisions on the frontiers of knowledge where, unfortunately, information may be scarce. Consequently, private credit agencies may be unable or unwilling to venture. And yet there is enough evidence in favour of technical change to warrant a much more rapid development than private or co-operative agencies will provide. Hence the demand that government take the initiative.

There is a logical basis for this. Government is the great risk bearer, the one agency capable of standing a sizeable loss without collapsing. Then, too, government is well adapted for the planning required since it can take chances that a private agency dare not take and is not restricted by major adherence to the profit motive. Besides, many of the new techniques, like modern roads, irrigation, and electricity, are so costly that no private agency may be able to handle them.

Another reason for government initiative is the relatively small size of most farms. A large business corporation can afford, and usually has, a good-sized research budget and a competent staff of experts whose job it is to keep abreast of new developments. And since it is government which usually sponsors or carries on agricultural research, this same government is the logical body to spear-head plans for credit to get the research results into use.

Large credit agencies, private and co-operative, do plan and provide the necessary credit in some cases. But the conservative credit attitude usually, and sometimes necessarily, associated with these

institutions means that if a bold plan is to be adopted, government has to initiate it and if necessary provide the funds to put it into operation.

How extensive this planning stage is and how prolific legislatures have been in establishing farm credit organizations of one kind or another can be seen by a glance through volume ii of the *Proceedings of the International Conference on Agricultural and Co-operative Credit* at Berkeley mentioned earlier. In this volume the reader will find a country-by-country account of farm credit activities in which governmental or governmentally sponsored agencies are frequently described. A total of 33 countries are included in this volume. In the study, *Farm Credit Activities in Selected Countries with Reference to Credit Programs for Underdeveloped Areas*, some 14 countries are discussed in detail. In all of them government in some form or another provides credit assistance to farmers.

Private v. Governmental Role

To draw the line between private and government activity in financing technical change is not easy. Those who think private agencies, including co-operatives, should have the field to themselves do not appreciate the important role government can play in initiating new ideas, in subsidizing where necessary, and in assisting with funds where private credit is insufficient. Government credit enthusiasts on the other hand may fail to realize the significance and beneficial effects of healthy competition between private credit agencies, or may fail to realize the advantage of having borrowers owing a private agency or co-operative rather than relying on their government.

One successful solution of this question is the use of the loan insurance principle. Under this plan private and co-operative agencies make what loans they can without a guarantee, and then have government insure other farm loans that have more risk than they can handle. If there are still loans that should be made but which no other agency has funds to handle, they can be made directly by government, or private and co-operative agencies can make them as agents for government. The loan insurance or guarantee has much to recommend it if rigid rules and inspection safeguards are enforced. With such an insurance system private agencies and co-operatives are able to expand their volume so as to operate more efficiently, and at the same time government can save itself the heavy expense of setting up and operating a field credit system. Yet government can prescribe and encourage types of technical change credit which might

involve much more risk than private or co-operative agencies would handle without a government guarantee.

Government Decisions on Technical Change

Government has to place its stamp of approval on technical changes which it considers acceptable as a basis for credit. In the United States, for example, family farm ownership has for years been a goal and an objective of various government-sponsored credit programmes. Land reform in various countries in Europe and Asia has received the approval of governments with extensive credit programmes usually involving non-negotiable bonds as a means of financing the changes. Denmark's co-operative marketing programme, India's community development project, and Venezuela's colonization and large-scale rice-growing projects are all examples of government approval of technical change. Irrigation and electrification projects in many countries have received government sanction and government credit.

III. *What Kind of Credit Organization is required?*

Credit for technical change needs to be clearly distinguished from routine operating credit. Technical change credit in most instances is venture capital committed to an enterprise with an uncertain outcome. Since the credit is different, the organization may have to be different. It would be more economical, generally, for an existing agency to handle the loans, but unfortunately it may be too conservative or too unsympathetic for the task. In such cases, as with the Farmer's Home Administration in the United States, a new agency is established which has the proper enthusiasm to push the new type of credit.

Credit Personnel trained in Farm Management

Success or failure of a credit programme can be predicted almost entirely on the basis of the type of personnel employed for the making and supervising of loans. The critical factor in making them is the arrangement made by the credit field-man for the use of the credit by the farmer. An analysis of the farmer's situation is required and a specific credit programme should result. It may be altogether different from the application made by the farmer. It may call, for example, for more credit than he asked for, and it may do so in order to put into operation the most profitable plan for a farmer who makes use of new techniques. This requires personnel with the same vision and training in farm management as are required in large-scale

projects where, for example, the economic feasibility of an irrigation project comes up for decision. The first problem is the overall profitability of the project, the second is the establishment of profitable individual farm units.

If the organization is governmental, it is generally desirable to have local advisory committees made up of capable well-established farmers. These local groups not only assist the field-man in selecting deserving applicants but they also act as a strong moral force in the community in support of full payment of all obligations by the borrowers.

Safeguards for Proper Credit Use

Eternal vigilance is required to ensure that the credit is used for the technical changes specified in the loan contract. If the borrower is allowed much freedom in spending the loan funds, the lender may find that a portion of the loan disappears in expenditures not planned and less productive, probably, than those specified. Pressure from creditors or an attractive consumption item may account for such expenditure. By all odds the best means of guaranteeing the proper use of funds is releasing them only in payment of the items specified in the loan. The credit field-man can ensure this by making the payment jointly with the borrower.

Private, Co-operative, or Governmental?

To this question the earlier statements on the role of government apply. Regardless of the choice made, those in charge should never lose sight of the major objective, namely, the use of credit to promote a desired technical change. Where existing organizations are weak or too conservative, government has to take the initiative and provide the organization and the credit. Where existing agencies are strong and forward-looking, government can look to them to do much of the actual lending with a minimum of governmental personnel and funds. In such favourable situations the major requirements of government are probably to provide the initiative to get projects approved and to establish government loan guarantees to enable private and co-operative agencies to make the loans where large amounts of risk are involved.

IV. Sources of Funds

Sources of funds can be classified into local, national, and international on the one hand, and private and governmental on the other. Our first objective is to evaluate local sources.

Local Sources

These should be considered in any agricultural development programme, though they are not likely to be adequate. Different farm areas are well known as either deficit capital or saving areas. In old well-established communities enough funds may exist and be available, but this is not the typical situation. Most farmers, whether owners or tenants, have less capital than would be needed for maximum operating efficiency.

Actually it may not be wise in all cases to persuade local sources of funds to invest too heavily within the community. If a drought or other unfavourable event should occur, those who had provided funds might have to call for their money or not be able to renew the loans which the farmers could not pay off during the emergency. A broad geographical base is a much better policy, especially in areas of high risk. There is merit in such areas in having the local people invest some of their funds in government securities or other safe investments which they can turn into cash in an emergency.

Another possible use for local funds is to bring them into a government insurance or guarantee programme. In this instance government would take over the loans in case of an emergency. In normal times there would be no occasion for local lenders to be embarrassed by defaults or requests for loan renewals.

Outside Private Funds on National Basis

Funds of a private nature arising outside the community can be used advantageously within it for farm development purposes. The problem here is to find some method of guaranteeing or assuring repayment. Small units, whether they be banks, investment companies, or individuals, are not going to send their funds to some distant locality for an irrigation development or for individual farm loans unless they have this security. A large co-operative insurance company, or a large bank with branches, or some government-sponsored unit can bridge the gap by mobilizing savings in various parts of the country and then by careful analysis satisfy themselves as to the soundness of the local loans. One procedure of mobilizing savings is for the credit agency to issue bonds in convenient denominations which can be sold to investors; the bonds are backed by the notes and security offered by the farmers or farm development corporation. It is not easy for a credit agency to get started in such a programme because investors like to see a good repayment record. In the United States the Federal Land Banks, which sell

bonds to investors for loan funds, get their start with the assistance of government capital. This capital was repaid, but additional capital from government was required in the depression of the thirties. This too has been repaid so that the system is now independent of government capital and is operating successfully.

Government Funds

In many countries agriculture is so short of capital that government is the only major source of funds. There is little opportunity for insured or guaranteed loans because private or co-operative agencies with funds to lend on this basis do not exist. If farmers in these areas are to get credit, government has to provide it. It is true that there are usually private moneylenders willing to lend at very high rates of interest, and it is true that farmers borrow from these lenders for the operating credit which they must have in order to put in a crop, care for it, and harvest it. But we are now concerned with a type of credit which will change a farmer's business to make it more productive and profitable, that is, assuming the technical changes work out as planned.

Government in its programme of obtaining funds should make certain that it does not cause an inflationary rise in the price level. Such a rise is likely to dry up the sources of funds and raise the cost of the items which the farmers want to buy with the proceeds of their borrowings. The difficulties of such a situation are even more acute in countries which keep the prices of food low during an inflationary period in which industrialization is accelerated. It also goes without saying that a deflationary period is a difficult one in which to carry out technical improvements with credit because farmers have to stretch their reduced incomes to cover heavy burdens of fixed and inflexible costs.

Government has an excellent opportunity to mobilize savings throughout its territory and to include whatever unused saving may exist in farming areas. This can be done by providing convenient offices where saving deposits and withdrawals can be made. For example, in Venezuela I was surprised to see the extensive use that people in rural areas made of the savings account services available through branch offices of the government agricultural bank. This round-about system of investing unused farm savings through government has much to commend it. An older farmer with some surplus to invest may not be able to take the chance of lending to his young neighbouring farmer who needs funds, but he can lend to his government and let government take the risk of extending the credit.

International Funds

When technical developments require purchase of equipment and other items from foreign countries, an external loan may be necessary. For example, a new electric generating station to serve a rural area in one country may require the purchase of equipment from another. Even if private or government funds are available within the country to cover the cost, the project may be held up if foreign exchange to pay for the equipment is lacking.

Emphasis in a technical development programme should always be placed on the costs of equipment, seeds, fertilizers, and other materials that are not available without out-of-pocket expense. These are the items that require money if they are to be delivered to the farm or other place where they are to be used. On the other hand, unused labour and local materials frequently may be obtained from the farmers themselves. This labour and these materials can represent savings contributed by farmers. The farmer who erects a new building, works on a new road to his farm, or digs a new well, is cutting down on his loan and adding to his own capital and the capital of the country as a whole. Technical change, in this manner, contributes substantially to savings and investment by mobilizing unused resources.

The International Bank for Reconstruction and Development, as its name implies, is specifically designed to provide credit for those technical developments which call for foreign purchases. This bank, organized as part of the United Nations, has 57 member nations and a capital of over 9 billion dollars.¹ Most of the loans made, apart from those for post-war reconstruction, have been for electric power, transport and communications, industry and mining, and agriculture, in that order. Loans made directly to agriculture have been relatively small in amount, though agriculture benefits indirectly from many of the loans for electric power, roads, and similar projects.

The Export-Import Bank of Washington, D.C., organized in 1934, is another source of credit for foreign purchases, especially for purchases of equipment and other materials in the United States. Loans by this institution directly to agriculture have not been large. Bernard Bell, Chief of the Economics Division of the Bank, commented in 1952 on their agricultural loans as follows:

In a number of instances, for example in the case of loans made by the Export-Import Bank to Chile and Mexico, and by the International Bank also to Chile, these agencies, the agencies of your governments, in turn

¹ A billion in the U.S.A. means a thousand millions.

extended credit to individual farmers to permit them to acquire the imported machinery and equipment. These were very clear and very simple instances of the direct relating of foreign loans to domestic credit to farmers.

In another instance the Bank financed the import of equipment which was operated by a government agency in the borrowing country to provide services to individual farmers, such as land clearing, levelling, plowing and harvesting.¹

A fundamental problem is involved in getting loans from the International Bank or the Export-Import Bank. This problem is the formulation of a feasible self-liquidating proposal that will meet the requirements of the banking institution. Some large agency, which may be a co-operative, a private agency, or government, must work out a plan and take responsibility for its execution and repayment. That portion of the project which involves local labour and materials should be financed within the country while the foreign banking institution can be asked to finance foreign purchases. There are three important steps preceding the obtaining of a loan from these two banks: acceptance of responsibility by some large agency or government, formulation of a well-thought-out development programme, and an aggressive effort to obtain the loan. On these points Egbert de Vries of the International Bank has made the following pertinent comment:

I believe that if you and your countries want to get the most of possible loans from the International Bank the first step is to determine for yourself what lines of development in agriculture are the best for the country. What are the deficiencies, especially in imported material for that development? Then, how can you convince the president of the republic or the minister of finance or the director of the central bank that this type of development is really essential for the development of the country? When a mission from the Bank visits your country, make sure that you get in contact with these people and again put up your conviction about agricultural development to the members of those missions because they may help you sell your own point of view to your own government. That has happened in a number of cases in different countries. In that way I am sure that the International Bank and the Export-Import Bank can help you greatly in the financing of your development programs.²

In summary, there are many and varied opportunities for the use of credit in facilitating and accelerating technical developments in

¹ *Proceedings of the International Conference on Agricultural and Co-operative Credit*, vol. i, 1952, pp. 163-4.

² *Ibid.*, p. 320.

agriculture throughout the world. What is necessary to get projects started in most cases is for government to take the initiative in planning a comprehensive programme. Once started, the next two tasks are organization for lending and arrangements to obtain the needed funds. In setting up a field credit organization, the agency involved should see that their field-men are well trained in farm management and should make firm rules to ensure that funds loaned are used only for the technical changes approved in the loan agreement. Wherever it is feasible, government should make use of the loan insurance principle to minimize the lending cost. Finally, loan funds should be secured from all sectors of the economy but with indirect reliance on local funds. Unused labour on farms and local materials should be used where possible and both the International Bank for Reconstruction and Development and the Export-Import Bank should be recognized as likely sources of funds to cover the cost of imported equipment and materials. Under these conditions credit can be used effectively to bring about technical developments in agriculture throughout the world.

P. N. ALMONACID, *Ministry of Finance, Argentina*

During these last fifteen years each country has apparently concentrated on its own national problems. Thus, from a monetary point of view, internal economic and monetary stability is emphasized as against international stability upon which financial policy was based before World War II. This is important, because what can be done inside a national economy depends on the available resources. It is also important to emphasize the progress which has been made in each country in economic planning and monetary research. There is no central bank in the world today which has not all the necessary economic equipment to start a project. The accumulated knowledge in planning for economic development can now be put to good use when financial resources are available.

In his introduction Dr. Murray stresses the fact that all the world is undergoing a technical revolution. A major problem is to decide which changes are most profitable and how to effect them under new conditions. Another big problem is to find and administer the funds necessary to make the desired changes. But inflationary repercussions have not been emphasized among the risks involved in technical development. Even in the case of good financial results, the time factor needs special consideration because investment is a dynamic process which, in its initial phase, creates new purchasing power without a corresponding production of consumer goods. This is a

vital problem. The monetary risks must be taken care of before any project of economic development is begun. This applies particularly to projects involving technical change.

The problem of financing and credit, as related to agriculture, was discussed at the F.A.O. meeting at Hot Springs in 1943, and at the Third Inter-American Conference on Food and Agriculture, held in Caracas, Venezuela, in 1945. The studies of central banks in the Western hemisphere provide another source of information, derived from the regional co-operation that is going on among American central banks.

Dr. Murray says that the Government is the great risk bearer, the one agency capable of standing large losses without collapsing. But we should distinguish between governmental action for the development of land-settlement projects, large irrigation projects, and other extensive schemes for industrial progress, and action on the part of central banks and the banking system. In the latter connexion the use of the loan-insurance system should be considered.

This system has been applied in the United States since the depression of the thirties; but several states, such as Oklahoma, Nebraska, Texas, South and North Dakota, and Washington had experimented with it as early as 1908. This system collapsed because of the bank failures during the agricultural depression of the early twenties. After the Second World War variations of the insurance principle were in operation in a number of countries, through the agency of the central banks, and by means of the so-called nationalization of banks or nationalization of the use of money. This last scheme has been applied in the Argentine.

Government-sponsored programmes, financed through the public debt, are appropriate to irrigation and electrification projects, whereas land reform and family farm ownership require only banking resources. In most countries these financial methods are similar.

Credit for technical development, in most instances, is venture capital committed to an enterprise with an uncertain outcome. It has to be distinguished from routine operating credit. There are advantages in absorbing risks within the banking system and there may be disadvantages. It all depends on the overall monetary policy and banking structure. Discrimination against the small farmer appears to have been the policy of many banking authorities in the past. Today there are central banks throughout the world which have overcome the inhibition of administrators regarding the provision of credit for the 'little man' in agriculture.

In order to obtain good financial results from a farm credit agency,

it is necessary to have personnel trained not only in farm management, but also in general economics and monetary policy. Co-ordination is required between three main levels, namely, the central bank, the main office of the discount bank, and the branch offices. At each of these levels the nature of the task differs. Research and policy-making have to be performed mainly at the central bank level; and practical execution, in the field office. In between come certain aspects of research in specific products and in particular fields or regions. The best means of ensuring the proper use of funds, is to release them only in payment for the items specified in the loan. This implies selective control in the use of money, as long as this can be done properly from the bank; and this requires trained and responsible personnel.

Where a banking system is weak in organizing ability, or markedly conservative, the Government will have to take the initiative and provide the organization and the credit. As a general rule, banks and banking personnel are rather conservative, and this is to the good for all concerned. The risk in technical projects is becoming less owing to progress in economic research.

Professor Murray points out that we have local, national, and international funds, as well as private and governmental funds. The type of fund to be drawn upon should be associated with the type of project; but generally it would be advisable to finance most of the direct requirements for technical change in agriculture from local and national sources. Countries which are reaching the industrial stage will probably proceed in this manner, whereas countries with a lesser degree of development might find it advantageous to do otherwise. There are no hard and fast rules in this matter and sometimes a compromise will be necessary.

The overall monetary conditions involved, and the economic set-up, are such that financing international projects is becoming quite a problem, mainly because of the emphasis on full employment. This is why, for the greater part of its financial needs, each country must depend almost entirely on its own resources. Progress has been made in legislating on foreign investments. This is very necessary in the case of those countries which are still in the early development stage.

The present monetary and banking system of Argentina is such that the insurance principle, as explained by Professor Murray, is implicit in it—mainly because the system has been based on the nationalization of private bank deposits rather than the nationalization of the banks as such. In these circumstances, the private banks are free to lend their own resources. So far as private deposits are

concerned, each bank has to make an agreement with the Central Bank, specifying the way in which that money will be used. In this respect the Central Bank has already drawn up a plan for the agricultural sector.

U. AZIZ, *University of Malaya, Singapore*

Because Professor Murray's paper is so comprehensive I shall merely underline and amplify a few of his points which come within the scope of my own experience in a small corner of Asia. However, before doing this I will try to redefine a couple of concepts. I do this with very considerable trepidation, but some sort of compulsion or neurosis forces me. We have been warned that change is not necessarily progress and we know that, apart from the most primitive economies, all economies are in a state of change because of basic changes in population and so forth. Therefore I shall try to split a couple of semantic hairs by differentiating between technological change and technical change. Very simply, technological change is associated with changes in the various forms of capital, machinery, tools, fertilizers and their efficient manipulation. I conceive that technical change has a much wider scope. It not only includes technological change, but also specific changes in such institutions as land tenure, size of farm, marketing, and credit. Further, for purposes of neatness in thinking, if nothing else, we should assume generally that technical change is something that is specific and deliberately planned. In other words, it is a known means towards a certain end, as opposed to general changes. If the end is accomplished according to our system of values, we call it progress. Professor Murray seemed to be aware of this in his paper when he said that he was dealing with technical-change credit and not with routine-operation credit.

Now I shall try to explore the first half of today's topic—the finance of additional capital required for technical change. To me there are three important questions. What capital is required? Where is it coming from? And how is it to be provided? Most of you here do not need to be told about the different categories of capital required by the farmer. However, in the context of the underdeveloped—or a better word, the mal-developed—economies there are special needs that normally do not appear in a textbook on agricultural economics published in the middle of the twentieth century in the Western world.

Before I proceed to this point I should like to draw your attention to my use of the term *mal-developed* rather than *under-developed*. This again is a semantic problem. Words may condition us to a

certain way of thinking, so I should like to stimulate your minds to think in other directions. My country is generally lumped together with the under-developed countries in most statistical and other publications. Yet we have in Malaya some of the most efficient rubber-producing plantations in the world. In fact, we like to believe that our natural rubber production is a good deal more efficient than the synthetic rubber factories in the U.S.A. and other countries. Over 80 per cent. of our other major industry, namely the tin-mining industry, has the most modern machinery obtainable, and these two industries provide about one quarter of our national income. In this sense I find it hard to believe that we are an under-developed economy. However, side by side with these very efficient plantations and mines you find subsistence rice farmers and rubber farmers who are earning in a year less than an American farmer would earn in about three weeks. Hence I use the term mal-developed in preference to under-developed. Mal-developed refers to the distribution of income and wealth rather than the distribution of technically advanced gadgets.

To return to the special credit needs, these needs are for changes in the marketing systems, land ownership, the development of land settlement schemes, and so on. All these institutions are absolutely inseparable from credit institutions. Let us look at the credit system of a mal-developed economy. This is very well discussed in several United Nations documents, but I will try to summarize. Professor Murray sees only the private moneylenders in the mal-developed economies, but there are banks, wholesale and retail traders who provide consumer credit, pawnshops as well as moneylenders. Superficially the institutions appear similar to those of developed economies, but on close examination one feature becomes outstanding. The credit system is a way of placing the farmer in economic chains. Farmers the world over must borrow. I know of no exception, although some of the bureaucrats in my country tell me that farmers should not borrow. A farmer's nearest or only source of credit is in a very strategic position to exploit him. Once he is in debt he must sell his produce to the merchant and, in economic jargon, *monopsony* is established. Also he must buy his consumer goods from the same merchant. If there is no significant competition among merchants, as very often occurs in these mal-developed economies, a *monopoly* develops. Within a generation the local merchants will not only control the whole village, but will begin also to own all the land around the village and very often will even have a lien on the labour of the villagers. Now please tell me which puny co-operative organization is going to defeat such a set-up. This rural indebtedness is chronic

in the sense that it extends not only for a lifetime, but also through whole generations of families. It is due partly to the low productivity of peasant farmers, but also to the very system of exchange, marketing, and distribution, within which the farmer exists. Because it is a system—a complex of strong economic relationships—one cannot hope to aid him by simply tinkering with one or two aspects of the system. Single- or even multiple-purpose co-operatives are paralysed. Inadequate government rural credit institutions are overwhelmed. Land-reform schemes get bogged down. Very often it has to be all or nothing. Piecemeal reforms are very likely to degenerate into show pieces for teams of globe-trotting visitors who generalize in 2,000 words from a three-minute conversation and write a book about the country after a seven day sojourn.

Therefore technical change to free the farmer and place him on a sound footing, to raise his standard of living and to improve his way of life will require a large amount of capital with very special backing. Professor Murray mentioned the beneficial effects of healthy competition. Unfortunately private enterprise will not be able to provide this credit, because it is based on exploitation rather than competition. We must turn to two other sources, the government and the people, and I am quite prepared to believe that when these two sources have been fully developed private enterprise will achieve a high degree of health and vigour. We all know how governments can try to provide capital for technical change. Professor Murray has said that if a bold plan is to be adopted, government would have to initiate it. Or to paraphrase him, if the existing agency is too conservative or incapable for the task, then a new agency has to be established which has the proper enthusiasm to push the new type of credit. In addition, the agency must have an adequate supply of credit. Government policy must curb all threats against this agency. We all realize the personnel requirements. Not only must you supervise the loan to the point where the farmer spends the money, but also you have to 'wet-nurse' the whole enterprise until he is on a sound footing and has learnt new habits and new attitudes that go with the development programme. This will make credit very expensive, but as an investment in people it will pay very big rewards.

What about the people? I again go farther than Professor Murray in his discussion of local sources. If people are given a chance to use small banks, they will save considerable sums, as he himself tells us is the case in Venezuela. But in many of the mal-developed areas and areas where money as an institution has not penetrated very extensively, you will find that people keep their savings in the form of

jewellery or cattle or paddy seed, or may even bury currency in the ground. Not only must you provide small banks within easy reach of the farmers, but you have to change their attitude about saving. Research by teams of economists and sociologists as well as agriculturists, is needed. I am suggesting that there is a significant amount of saving available, but it is not being tapped or mobilized. I am not suggesting that it would be adequate, but that participation in such a scheme would have a tremendous psychological and sociological impact generating a trend towards progress.

In conclusion, technical change means much more than simply one or two changes in the context of mal-developed economies. Indeed it may mean total change. The supply of capital alone can accomplish only the most superficial results if other reforms do not accompany it in the fields of land ownership, tenancy, marketing, transport, processing, and storage. The neglect of any one sector will jeopardize the whole project. Finally, I believe that practical means must be found to enable mass participation in technical change processes, such as by mobilizing savings. This should be coupled with a programme of fundamental education which will change the basic attitude of the farmers towards capital and saving.

R. AKTAN, *University of Ankara, Turkey*

Government activity in agricultural credit is especially needed in the under-developed countries. In some of them the Government feels that it ought not only to provide and supervise credit, but also that it must combine governmental farm credit and programmes of technical change in order to increase the effectiveness of both. For example, in Turkey the agricultural bank is completely owned and operated by the Government. It is a relatively old institution, established in 1863, has about 400 branches and provides most of the credit needed by Turkish farmers. Working in co-operation with the Ministry of Agriculture, the bank gives farmers credit in kind for improved seed and breeding stock which have been developed in the Ministry's experiment stations. Both seed and livestock are of good quality and are tested and adapted to the country's conditions. Individual farmers or villages which receive this type of credit are required to repay the bank in cash. They are allowed one year to pay for seed and from two to four years for breeding stock. In both cases reasonable interest rates are charged.

Formerly this bank also provided modern machinery and implements on credit, and the farmers were allowed from two to four years in which to pay. Nowadays, however, a special agency of the Ministry,

Zirâi Donatım Kurumu (Agricultural Supply Society), performs this service on a much broader scale. It provides the farmers with all kinds of farm machinery, implements, fertilizers, insecticides, and even means of transport such as horse carts, jeeps, and tractor trailers. These are distributed through local branches of the agency and are sold on liberal cash or credit terms. Prices are usually lower than those in the free market, and the materials are superior and dependable, giving the farmers confidence in the *Donatım*.

By providing credit in kind the Government pursues a policy of technical change and improvement alongside a farm credit policy. The costs of each programme are reduced, and technical improvement is ensured. Furthermore, farmers acquire dependable productive factors at reasonable costs and on credit. Thus both government and farmers are satisfied. So far as I know, this practice is unique and the results, so far, are satisfactory and encouraging. It is a short-cut method which may be found worthwhile in other less well-developed countries.

A. SAMBERGS, *Jordbrukets Utredningsinstitut, Stockholm, Sweden*

Many examples have been given of the conditions in different areas to show the numerous ways a given problem may be regarded. It is not only the technical structure and natural conditions of agriculture which influence the capital formation in a country, but also the economic, constitutional, and other institutional factors. My comments in the main refer to countries which have reached a fairly high technical standard within agriculture, where there are high levels of income and consumption and where capital formation on the whole is sufficient to secure technical development. These conditions generally apply to the Scandinavian countries. For example, a farmer wanting a loan can get one at a reasonable rate of interest. However, some farmers still look on indebtedness as something of a moral offence (in Swedish we use the same word for the concepts of *debt* and *guilt*), instead of considering credit as a purely economic tool. To be free from debt is still regarded as a purpose in itself.

Technical improvements in Swedish agriculture have been very great as you have learned from Professor Pihkala. These improvements have been made without increasing the indebtedness of agriculture. Between the years 1933 and 1952 the average relation of owned capital to total assets increased from 64 to 77 per cent. The main causes of this development were favourable income conditions which permitted greater savings and higher asset values, particularly for real estate and forest assets. However, not all technical changes

demand increased capital, as for instance farm building which is now less expensive. Some new methods even entail less capital or only a small increase. Thus capital is released for other purposes. Technical advance may involve a transfer of capital as when horses are replaced by tractors and other machinery. The sale of forest assets (in part a realization of capital gains) played an important role in the financing of mechanizing Swedish agriculture.

None the less, at the present time there is a shortage of credit because of restrictions to prevent further inflation. Some improvements are undoubtedly delayed, but agriculture seems to be suffering no more than are other branches of the economy. There are several connexions between the methods of financing technical change and the inflationary problem. I was a little disappointed that Professor Murray only partly touched on this problem since this may be the most important question within our present discussion. Mr. Almonacid also made some remarks on this problem. Living in a time of strong inflationary tendencies, we know that gains accrue to the owners of physical capital and losses to those who have their savings in financial assets. Disregarding the consequences for the economy as a whole, should we not advise farmers to exploit their credit possibilities and not to depend so much on their own savings to finance their investments? Of course, the increased risks of heavy indebtedness are well known, but the answer depends on how one estimates the probability of a continued fall in the value of money. I am not going to make a guess at this.

Considering the national economy as a whole, the most important problem becomes the effect of different financing systems on the value of money. Investments financed by savings as well as by loans may increase inflationary pressure. For loan-financed investments this is always the case if new borrowing is not counterbalanced by savings elsewhere in the economy. Savings used for investment in physical assets such as houses may also have an inflationary effect. The only real anti-inflationary savings are those which are held in financial assets. I regret that my time is limited, but I hope that this aspect of the problem will be treated further in the discussion.

W. J. THOMAS, *University of Manchester, England*

In nearly all economic environments, even in the most advanced, the ability to accumulate capital seem to be a prerequisite of progress. There are obvious needs such as for new machinery, for increased livestock, for permanent equipment, and for the higher operating expenses which intensification of land use carries with it.

But these are only the more immediate needs, and in highly developed Western economies the provision of capital to meet them should not present unsurmountable difficulty. With relatively high and growing agricultural incomes it may be expected that the industry itself will be able to accumulate a large share, if not all, of the new capital required. There is a difference of opinion here between Professor Murray and me. He states that farm areas are well known as deficit capital or saving areas. I maintain that this is by no means true universally, particularly in the areas of advanced agriculture of Western economies. It is not true of large areas of the United States or of the United Kingdom or of north-western Europe generally. The late Professor Ashby demonstrated, in his last presidential address to the Agricultural Economic Society of the United Kingdom, that farmers were often net creditors rather than net debtors to banks. His findings were based on a study carried out in the south-west of England but I believe the same is true elsewhere.

Even in the case of temporary difficulty or inability to accumulate capital from within the industry it does not follow that agricultural progress need stagnate, for in a diverse economy with a low proportion of agricultural population, outside sources of capital may be drawn upon if there is the will to do so, and the problem may resolve itself into how best to direct and distribute investment from outside sources.

In under-developed economies, however, the problem of directing investment appears secondary to that of accumulating the capital in the first instance. In low-income communities, where the propensity to consume is high, small advances in productivity and in incomes are very easily dissipated. And yet, in communities largely consisting of agriculturists a rise in agricultural efficiency and productivity is a prerequisite of economic progress. Their needs for capital go far beyond the immediate requirements of the farm itself for, as members of this Conference have repeatedly stressed, they require the development of means of communication and transport, of marketing and processing agencies, of commercial organizations, and of educational and health facilities if they are to enter more fully into the field of commercialized agriculture. And sooner or later, they will need capital for the erection of towns and of factories if they are to satisfy all the needs of a developing community. Unless they can depend upon the help and even the philanthropy of governments other than their own a very large proportion of saved capital will have to come from the domestic agricultural industry.

With rudimentary systems of taxation and an industry organized

in extremely small units the accumulation of capital for external purposes becomes very difficult and we may need to think as much about how to collect meagre resources of capital into worth-while amounts as we need to do about the distribution of investment and the correct economic priorities.

As Dr. Sherman Johnson reminded us, poverty is self-perpetuating, and we must find ways of collecting the wherewithal to start poverty-stricken communities on the ascending spiral of prosperity. There has been a good deal of criticism in recent years of the operation of government marketing agencies, such as the West African Cocoa Board, but at least they have shown us one possible way of accumulating capital for development. If they have tended to hold the rest of the world to ransom in favourable market conditions, the process has not been too painful and it is good to see that, now and again, the under-developed community can exploit the more advanced. May there be many more such opportunities!

As we have heard, there are many unsolved problems even in advanced Western communities. In Britain, not the least is the problem of financing the change towards owner-occupation from tenant farming. The increase in capital requirement of the new technology is large enough, and when you add to it the need to finance the purchase of a farm the new entrepreneur needs a formidable sum. In Britain it is having the effect of delaying entry to such an extent that the average age of farmers is increasing rapidly with all that it may mean in loss of adaptability and possibly in the desire to achieve high incomes and to introduce the technical innovations which make this possible. Most credit systems for the purchase of farms are based on the principle of mortgages related to the value of land and buildings. With increasing need for operating capital, is it not time that we were thinking of the provision of credit related to the whole equity in the business and not merely the investment in one only of the resources?

The possibilities of technological advance are immense. They carry with them, in the long run, the need to reduce agricultural populations. This has been going on for centuries, but apparently not fast enough to achieve parity between agricultural and non-agricultural incomes. Should we not be thinking now in terms of methods and institutions to speed up this process and to finance it, for the present position is one of considerable suffering and frustration for many agriculturalists and an economic misuse of human resources?

In the long run, too, not only will we need to retire people out of

farming but we may, at least in Western communities, have to retire land as well. One of the great problems of the coming years is whether we should leave this to the processes of the market or whether we should plan for it, or control it and finance it in some other way. Whichever way we do it eventually, it will pay us to give it some study and forethought now.

V. CIARROCCA, *Osservatorio di Economia Agraria, Rome, Italy*

Since the beginning of this century many changes have occurred not only in technology but also in credit and banking systems. According to Professor Murray agricultural credit is becoming more and more a governmental business, either directly or indirectly. Private funds are not easily attracted, since agriculture does not seem so remunerative as do commercial or industrial activities. It is the opinion of private lenders and bankers that agriculture is a declining activity. But in point of fact agriculture needs capital as never before, and this Conference has focused the problem because technological change and new capital are the same thing. More funds are needed to increase productivity and to decrease agricultural populations in order to increase efficiency. It is important that the various governments and international agencies hold and emphasize this opinion. In Italy technological change in the agriculture of the southern regions is financed by the para-governmental institution, the *Cassa per il Mezzogiorno*, which finances not only the big irrigation projects, but also the implements and improvements needed on the farms. This agency recently obtained a loan from the International Bank of Reconstruction and Development. Similar institutions exist in other countries, but they must have a basis for constant, not sporadic, action because the financing of agricultural change is the best way to ensure general progress in an integrated economy.

G. BELTRÁN, *Ministerio de Agricultura y Cria, Caracas, Venezuela*

The planned injection of technical change into agriculture requires that farmers have a source of finance, and in any broadly based programme of change this source is some public (government) agency. Within the limits of its resources this agency is faced with the task of maximizing returns in terms of some criterion and within some time period. Perhaps the major decision towards this end is the distribution of available funds between supervised credit and unsupervised or common credit. In more highly developed economies the latter type of financing predominates. It is assumed that farmers are equipped with the *know-how* and with complementary assets so as to

be able to use loans productively; and that the application for funds rests on at least a casual analysis of the farm business and the overall economic outlook. (Much of this analysis may involve methods and data made available by publicly supported research and educational institutions.)

No assumption of this sort can properly be made in the case of the more primitive agricultures. Even in the rare cases in which there is little concentration of holdings in land, neither the socio-economic institutions nor the inherent movement of the economy have thrown up a mass of forward-looking farmers who view farming as a business and who are concerned with, and technically equipped to handle problems of enterprise reorganization, and of scale and capital form that a developing technology creates. The setting for a credit programme in the under-developed country is thus rather inhospitable. Much of the problem is sociological, and the credit weapon by itself will scarcely dent it. Indeed, it is hardly an exaggeration to say that the typical farm-credit agency in the less well-developed areas keeps itself *in the black* only by financing those who do not need credit from public sources at all. For this reason increasing thought is being given to the productive potential of supervised credit systems in which the supervisory element may absorb a greater portion of the available funds than does the credit phase itself. Action is built around 'Farm and Home Plans' in terms of what is at hand to work with and of where and at what rate we propose to go. There is some empirical evidence available (as for example in Venezuela) to suggest that this approach may yield much more than will an identical expenditure arbitrarily apportioned between independently operated credit and extension programmes. There are serious problems, however, in the use of supervised credit. One is that for maximum effectiveness it cannot be limited to the operating or short-term type. As activities spill over more and more into intermediate and long-term investments, the demand on funds snowballs to large sums. This is particularly true when on social grounds much of the newly created savings-investment potential of the client is absorbed by expanding consumption. Again, the supply of competent supervisory personnel is usually insufficient for a large-scale programme. Many of the so-called trained people are undertrained by the standards of an advanced economy. Many are drawn into private industry by the lure of higher pay and greater security, since the under-developed countries generally lack an effective civil service embodying employment rights along with promotion or recognition on a merit basis. Few of the new graduates of practical or more advanced schools of agriculture

voluntarily accept exile to the hinterland as an employee of a new and traditionless organization, in preference to their newly tasted urban life. And again, supervised credit programmes sooner or later run into the land-tenure problem. To activate their dormant energies and imaginations most rural people require some assurance that they and their children will benefit from what they have created. Under many existing tenure systems and governmental attitudes the future is uncertain in this respect.

Additional obstacles to an effective credit programme based on the supervisory principle readily come to mind. A detailed discussion of these would not, however, alter the fundamental suspicion that the agricultural situation in the typical under-developed economy requires a diversion of funds from common to supervised credit if the yield of such funds is to be maximized. Such a diversion will be most productive if the supervised credit effort is centred in selected regions rather than being spread widely and hence thinly. A second key to success is that the availability of funds and supervision to individual farmers should *not* be made conditional upon a resource use which is rigorously consistent with whatever set of commodity production goals happens to be nationally in vogue at the moment. Neither credit nor supervisory funds can be efficiently used unless aimed at the *total* farm operation.

J. CHONCHOL, *Ministry of Agriculture, Santiago, Chile*

It seems to be very important to consider the problem of investment for technical development in agriculture in a much wider context than that of agriculture alone.

In the under-developed countries the problem is simple. Their populations have very low standards of living, and very low levels of consumption and investment. The problem is to speed up their development, by means of conscious planning efforts, so as to decrease the gap in standards of living which separates them from more highly developed countries. Without this it is impossible to think of adequate international understanding and integration.

Since these countries have relatively little capital, the first step in the realization of this plan is to establish priorities for investment. The choice may vary from one country to another but, in general, priority must be given to basic investments, such as transport and power, without which no modern economy can function.

Second priority should be given to industry, for two reasons. First, in enlarging their economic foundations, it is necessary to avoid the serious and frequent internal disorders to which they are subject as

a consequence of the great variations in the international market in the volume and prices of the raw materials which they produce. Secondly, industrial development provides the only means of absorbing the surplus population liberated from the countryside by the development of agriculture.

This dual process of investment in basic services and in industry has had a high priority in the development plans which most of the under-developed countries have carried out in the last twenty or thirty years. Sometimes they have gone a long way on this road while almost forgetting agriculture, thereby inducing a serious lack of balance which has made it necessary to retreat a little. Today the accent is placed on the urgent need to develop agriculture at a rate compatible with that of industry. Without this the whole economic development of these countries runs the risk of being checked. But it is equally important to continue investment in industry and services.

For this reason we believe that if these countries with little capital of their own are to develop at an accelerated rate it must be by means of large-scale international aid.

I wished to say this because the only part of Mr. Murray's paper with which I disagree is the end. He tells us that at present the International Bank and the Import-Export Bank are adequate instruments, on the international level, to provide the credits necessary for the financing of technical development in agriculture. I believe, on the contrary, that these organizations do not have adequate means at their disposal, in relation to needs. Furthermore, as even Mr. Murray recognizes, these organizations have made loans chiefly for the development of industry and services and only to a small extent for agriculture. Even the loans they make for agriculture are, in the main, for the import of machinery from highly developed countries. But mechanization is not the best method of technical improvement in agriculture in those countries where it is not the labour but the capital factor which limits the increase in production. These countries need those technical improvements which yield the most produce with the least unit cost—such as artificial fertilizers, seed, insecticides, and sires to improve stock. For all these things it is necessary to organize international credit on a large scale, not only in cash but also in kind. The means for this do not exist at present in the international field on an adequate scale.

W. G. MURRAY (*in reply*)

I was pleased with the distribution of comments. We have had three from South America, three from Europe, one from Asia, and

one from the Middle East. Mr. Almonacid brought out effectively the point on inflation. If money is loaned, it should result in increased production in order to prevent inflation. In the main I agree with Mr. Aziz on his distinction between the technical and the technological and on the vicious spiral of debt, especially as it relates to the problem of private investors and how they can get the farmer into difficulty. In many parts of the world there are unique and peculiar debt situations, and he may have in his country a situation which warrants a considerable amount of government effort, especially in mobilizing savings now in the form of jewellery and other kinds of wealth. Mr. Aktan pointed out a short cut in credit which means that the Government takes on a good deal of responsibility, but it is an experiment which will be interesting to watch. I am willing to accede to Mr. Sambergs that the problem of inflation is definitely tied up with credit as was shown by the results of the inflation which preceded the thirties in the United States. Time was too limited for me to give more attention to this serious problem. I differ somewhat from Mr. W. J. Thomas in that if you add up all the savings in a community you may have enough to finance agriculture. Those savings are not really available to agriculture. Often the individual farmer needs to have them in some form which can be used in an emergency. They are part of the operating capital. However, I like his point about the total equity of the farmer. Mr. Beltrán raised a question on the feasibility of supervised credit because of the high cost. If you are to provide any credit through governmental means to farmers on a low economic level, and if through that credit you endeavour to raise their level of living, you should restrict the amount to what can be provided on a supervised basis. Whatever funds are left can be made available through private agencies to farmers on a higher economic level. In short, you have to cut down the speed with which government provides credit to low income farmers if resources are limited. I differ from Mr. Chonchol on the question whether agriculture or some other phase of the economy should come first. I propose simultaneous development. At the same time that roads, electricity, education, or industrialization are developed, we should give some consideration to the plight of the farmer. All I ask is that the farmer should not be placed last. Whether the International Bank is adequate, I am not in a position to say. We cannot settle that today, but possibly we could have a special symposium or maybe propose the question to the United Nations.