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Factors Affecting the Flow and Productivity of Capital to Agriculture—Taxes, Products, and Factor Subsidies

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F.A.O.

I. General

THE present notes focus on certain key aspects of the flow of capital to agriculture which are relevant to policy formulation in developing countries. After examining certain limitations to the exact measurement of productivity of capital in agriculture, including the inter-relation between capital investment and current inputs, the paper deals with certain key aspects of the role of government as it affects capital flow and productivity.

In this context attention is paid to the relationship between the provision of social overhead capital and the modification of the climate for investment in the private sector, and to the influence which the kind of social capital and the way in which it is provided, can have on agricultural development, particularly where the use of underemployed labour is involved. In the discussion on the impact of government on the climate for rural investment, we touch on some of the implications for capital formation, of the reform of the administrative framework and of the agrarian structures, on the duality of motives in taxation as between increasing revenue and providing incentives, and also on the influence on investment decisions of policies as regards subsidies on output and inputs. Special attention is devoted to some of the questions arising from the supply of more institutional credit to agriculture, with particular reference to approaches towards greater rationalization in present practices.

The impact of the external sector on capital formation is dealt with next; this involves reference to problems involved in attempts to diversify trade patterns and to influence terms of trade—particularly through marketing boards. In the context of links between trade and private investment, special mention is made of promising developments which may have wide application.

¹ The author is Director of the F.A.O./I.B.R.D. Co-operative Programme, at the Food and Agriculture Organization of the United Nations, Rome, Italy. The ideas in this paper benefited from fruitful discussions with many of his colleagues in F.A.O. and the World Bank. The views expressed here, however, do not necessarily reflect those of the Organization.

The paper concludes with a discussion of certain aspects of the present situation as regards public external aid to agriculture.

The theme running through and uniting the various facets of this wide-ranging discussion is the need to look at the problem of investment in agriculture in the broadest possible context, to ensure that inconsistencies damming the flow of investment in agriculture be removed and the positive factors encouraged.

The flow of capital to agriculture is related to the over-all pattern of development of the specific economies whose agriculture is being examined, and also to the use and efficiency of complementary inputs within the agricultural sector itself. This flow is dependent on levels of income, on propensities to save, and on the capacity of the agricultural sector to generate savings, which in the final analysis is related to the conditions of agricultural production—technical, economic, and social. The demographic pattern is also a basic determinant of the flow of capital and its productivity. Heavy initial population pressure and a high rate of growth add to the capital needed to maintain, let alone raise, *per capita* output, though it may also carry, in the guise of abundant labour, a potential for capital formation, provided necessary conditions obtain. Political considerations, sometimes ephemeral, also play their part: they include the nature and stability of the system as a whole, the relationship between various components of the government (e.g. federal and State governments), with its attitudes both to private initiative and property, and to foreign, public, and private capital; also important in this context is the attitude of the outside world to development in the country concerned.

Because of the widely differing circumstances, an adequate analysis establishing the relevant relationships can only be made on the basis of detailed case studies. This pragmatic, case by case, appraisal is particularly important if the most suitable combination of measures is to be adopted. It is possible to detect in each and every country deficiencies in every aspect of the over-all framework, in agricultural institutions and in agricultural technology. Administrators, economists, and engineers, with an eye to potential, may be tempted to urge maximum redress for every field; the result may well be achievements of a lesser order of magnitude than if greater selectivity were applied.

Attempts have been made from time to time to estimate the productivity of capital in agriculture, with the object of determining the requirements and contribution of the agricultural sector within the framework of the development programmes. There is no doubt that governments need at least some medium-term estimates for the allocation of investment, but over and above the inherent weaknesses of basic statistics in most developing countries, the techniques used so far have slight validity. Capital/output ratios are supposed to give a measure of productivity, but even when incremental rather than average, they have limited operational use, particularly in the agricultural sector. Production functions are not homogeneous. Partial functions conceal the complex of factors leading to a change in output, such as changes in scale, factor substitution (based on

changes in price relationships and technical habits), and the development of new inputs and methods of combining inputs. Because of climatic, technical, and biological interactions, factors of production often complement, and are only partial substitutes for each other. Thus, the experience of countries at various stages of development shows a large degree of variation in capital/output ratios, depending on the physical potential, existing infrastructure and on the institutional and administrative framework. Furthermore, contradictory forces may operate in determining the level of the ratios, such as the exhaustion of land potential on the one hand, and, on the other, the new techniques and increased adoption of new technology. Finally, the productivity of capital is also determined by the availability and efficiency of complementary inputs to which increasing attention has recently been devoted.

The greater emphasis placed on such inputs illustrates how fashions in recipes for economic development come and go. At one point, the notion prevailed that economic development depended essentially on the growth of industry with, as a consequence, the starvation of the agricultural sector of capital. Several developments have brought about changes in attitudes. Industrialization policies led to heavy strains on the centrally planned economies. The food problem assumed vast dimensions with relentless population growth in the developing countries, already afflicted by heavy balance-of-payments pressures. More specifically in the agricultural sector, there were examples of dramatic waste in major irrigation works owing to failures to provide complementary investments and on-farm requisites. At the same time analysis of experience and the results of research pointed more and more to the large potential of increased usage of fertilizers and improved seeds. The upshot was first the advocacy of 'balanced growth' with larger resources being devoted to agriculture, and later to the 'key sector' approach where agriculture was given a pivotal role in the economy.

The changeover towards greater emphasis on current inputs and the expectations of quicker results is also supported by a reading of historical analyses such as are used in the U.S.D.A. Economic Report No. 21, various articles, notably by Ruttan, and by the E.C.E. in its study of Factors in Economic Growth in Europe. If questions of definition¹ are set aside, it is clear that in some key countries increases in agricultural output have been associated with much higher increases in current inputs than in capital inputs.²

¹ See especially K. L. Robinson, *Journal of Farm Economics*, 1951 for his discussion of the Ruttan article immediately below.

² U.S.D.A. Economic Report No. 21, *Agriculture in 26 Developing Nations*. V. W. Ruttan, 'Agricultural Growth in Output per unit of Input', *Journal of Farm Economics*, 1957, vol. xxxix, pp. 1566 et seq. The same author, in 'The Contribution of Technological Progress to Farm Output 1950-75', *Review of Economics and Statistics*, vol. xxxviii, (1956) p. 67, estimated that for the United States a less than one-fifth increase in capital input (including land) and a near doubling of current inputs from 1929 to 1955, was associated with an increase of gross output of about 60 per cent, and an increase of net output of one-third. The crucial role of current inputs becomes even more apparent

These studies show conclusively the crucial role of current inputs in the development of agriculture. But do they necessarily prove that capital investment is unimportant? As regards the E.C.E. conclusions, it can be argued that a period as short as a decade does not allow full reflection of the impact of capital on agricultural productivity. The reservations above on usefulness of capital/output ratios apply *a fortiori* to the analysis of the respective contribution to productivity of capital and current inputs. In southern Europe, at any rate, much of public investment was designed essentially for social reasons without adequate regard for economic considerations, and consequently the average productivity of capital was depressed. Higher rates of growth might have been expected if there had been more appropriate selection of projects. The real question is whether, in the absence of capital investment, the effectiveness of current inputs would have been as high as they were, and whether more effective investment policies would not have raised the marginal productivity of capital and current inputs. In large areas of the world considerable investment is needed in the rural sector if physical obstacles and hazards to increased agricultural production are to be overcome.

Both the joint and separate effectiveness of current inputs and investment in agriculture depends to a large extent on investments either partly or entirely outside the sector. Within agriculture their effectiveness depends on the institutional and administrative framework, on adequate research for the application of new technology, and on the formulation of appropriate policies to favour technical change. In this process of raising the level and the productivity of capital, the role of government is fundamental.

II. *The role of government in the flow of capital to agriculture*

Within the framework of their resources, governments can affect the supply and productivity of capital to agriculture¹ by providing social overhead capital, by modifying the climate within which private investment

when account is taken of the fact that capitalization of agriculture was in fact increasingly labour-saving.

Similar evidence comes from a study of economic growth in western and southern Europe carried out by the Economic Commission for Europe of the United Nations (*Some Factors in Economic Growth in Europe during the 1950's*, United Nations, prepared by the Secretariat of the Economic Commission for Europe, Geneva, 1964). There was no apparent relationship between growth-rates and investment ratios for the Western European countries in the fifties, and the range of the incremental capital output ratios is enormous. It also appears from the study that all the southern European countries except Portugal (where the incremental capital/output ratio was high) achieved relatively high rates of agricultural output with relatively low rates of capital formation. Current inputs which rose most steeply in southern Europe were fertilizers and pesticides.

¹ See Walter Heller, 'Fiscal Policies for Under developed Economies', *Papers and Proceedings of the Conference on Agricultural Taxation and Economic Development* held under the auspices of the International Program in Taxation of the Law School of Harvard University. Edited by Harbell Ward in association with John Proombin, Cambridge, Mass., 1954.

decisions are taken and by channelling credit to such investment. In fulfilling these functions, which are partly complementary (since the existence of social overhead capital is often a prerequisite for productivity of investment), and partly substitutes for each other, governments are faced with difficult choices. The expression of these choices should ideally form part of their long-term and medium-term development programmes. These programmes, however, even when medium-term, can provide only a very broad indication¹ because of the variation in conditions from year to year, especially in relation to the foreign sector.¹ The operational instrument remains the annual budgets. The design of these budgets, however, is still essentially financial and fails to give clear indications of the framework of policy.

The supply of 'social overhead capital'² to agriculture raises a host of issues of a technical and political nature. In the initial stages where the basic decision is made, it involves a wrangle between government departments, each fighting for its share of the budget; in the case of multipurpose projects this rivalry is particularly acute and complicates the task of allocating government funds to different sectors. More generally, in the choice of projects, the allocation of social capital calls for a delicate balance between short and long-term investments, and the courage to recognize explicitly that those investments of a social character which have limited economic impact and an 'inadequate rate of return'³ are a cost to long-term development and to society. There has to be a choice between dispersal of efforts dictated by political pressures, and concentration leading to maximum returns. Further, machinery is essential for

¹ Uncertainties in this respect are somewhat mitigated by attempts to plan aid through consortia on the basis of medium-term programmes, as well as by commodity agreements. On the latter, however, see below.

² Here defined in its broadest terms as 'government provided investment' designed to expand productive capacity. The term covers 'human investment' in health and education, including research and extension, and physical investment in infrastructure. In relation to agriculture, the latter includes not only investment directed to agricultural purposes such as land improvement, drainage, and irrigation works, but also multipurpose investment such as improvements in transport and communications, whose benefits go to the entire economy. The scope of the public sector naturally varies from country to country, and to some extent is influenced by the current ideology. However, if efficiency in an economic sense is the major criterion, the coverage of such investment is determined by the extent to which 'social costs and returns' differ from private costs and returns, by the maturity of investments in relation to the horizon of 'private investors', and also by the 'lumpiness' of such investment in relation to what private investors can undertake.

³ All projects are bound to have some economic and social impact. The distinction between 'social' and 'economic' projects is convenient but basically misleading. The practice at present in many countries is to reserve rigorous cost/benefit analysis to well-defined projects involving major construction. Land-settlement projects are rarely given adequate scrutiny. They need to be analysed like all other projects. Social cost and return calculations based on shadow prices are bound to have an arbitrary element, but they do at least give a possibility of some correction of factor prices. The question of what is 'an adequate rate of economic return' again makes an arbitrary assumption about the scarcity of capital. There is inevitably a conventional wisdom about this, for which there can be no substitute.

the elaboration of investment projects, as well as for their appraisal—in terms of returns to the economy and to the beneficiaries. And finally the administration must be geared to effective implementation.

Once the decision to invest is made, and the form of investment is decided, execution is fairly simple. The basic *enterprise*—the construction of a hospital, roads or, nearer home, of an irrigation network—can be easily delegated to an authority in charge of construction and on the basis of a blueprint, departures from which can be kept within reasonable limits; but, where it comes to a comparison of *ex ante* costs and benefits with *ex post* costs and benefits, there is likely to be major divergence in the accuracy of forecasts on the two sides of the equation.

The 'cost estimates' in the final appraisal of the project are on the whole fairly easy to determine. The 'returns' side of the 'social capital investment' in agriculture is, however, much more difficult to predict. This is due only partly to biological hazards, such as changes in weather. After the 'construction' stage is passed, the basic decisions to take advantage of infrastructure rest on a multitude of beneficiaries, and there is then widespread delegation. Consider, for instance, an irrigation scheme: once the major works are built, there is need for on-farm outlays of all kinds, and there is also need for skills to take advantage of the availability of water, and for incentives and adequate institutions to develop and use these skills.

This points at once to the complementary nature of the provision of social overhead capital with the other two functions of government—the channelling of funds to investment projects in private hands, and the improvement of the climate for private investment. This interdependence, to which great attention has been paid in recent years, should not be exaggerated. In the nineteenth and early part of the twentieth century, investment in the areas of recent settlement (which, incidentally, was essentially private), particularly in the Americas, was not directly concerned with primary production itself, but was used to build up the infrastructure of public services which laid the basis for the development both of agriculture and, to a lesser degree, of industry.¹ More recently—in the early fifties—the provision of an infrastructure in Turkey in the form of roads provided an initial stimulus to agricultural development, even though at the time complementary measures were taken only to a minor degree. Social overhead capital, especially in communications, diminishes geographic and social distance and mobilizes *latent resources*, particularly where a large-scale subsistence sector can be brought within the market orbit. The elasticity of effort to commercial opportunity is appreciable.²

¹ See Nurkse, 'International Investment Today in the Light of Nineteenth Century Experience', *Economic Journal*, Dec. 1954.

² This is Stage I in the Perkins-Witt model: see 'Capital Formation: Past and Present', Maurice Perkins and Lawrence Witt, *Journal of Farm Economics*, vol. xliii (1961), pp. 333 et seq. The difficulty about the Perkins-Witt models, as with those of Mellor relating capital supply to stages of development, is that within the same country different stages of development can be distinguished, which argues for a combination of solutions for use as alternatives.

In terms of a straight analysis, the rate of return may well justify the investment, even though it is below the optimum which would be attained if all complementary measures were taken. In economic development, of course, getting less than the optimum is better than getting nothing at all, provided there is a positive net return to capital.

The kind of social capital is of both direct and indirect relevance. Direct relevance, to the extent that such capital provides infrastructure essential to the elimination of specific bottlenecks; indirect relevance, first to the extent that it stimulates activities which are of a developmental character, and second, to the extent to which it contributes to the creation of a favourable climate for development. Thus, the construction of a major dam does not usually mobilize the latent forces for agricultural development as rapidly and conveniently as the installation of a large number of tubewells providing an equivalent amount of water for irrigation. In the former case, major organizational and administrative changes are necessary which require large-scale planning and execution. In the latter case, although maximization of returns does require considerable technical and organizational support, phasing of investment tailored to such capacity is possible. Furthermore, it is easier in such cases to evoke individual response. This, of course, does not imply that, whenever the choice is between large-scale irrigation development and minor irrigation development, the balance should sway towards the latter. It implies that, in considering alternatives, the 'ease' of evoking response should also be taken into account within the framework of a comprehensive calculation of costs and returns.

The way in which social capital is provided, particularly when it involves the intensive use of labour, can be of major relevance in loosening bonds which are a major obstacle to agricultural development. 'Surplus labour' in agriculture has been considered by Nurkse and others as a major source of capital formation¹ for industrial development, in the first instance to supply the labour force required, and also for agricultural development. It has now been proved conclusively that because of the high cost of associated direct infrastructure, the absorption of labour by industry and services well into the intermediate stages of development is likely to be small and very expensive. In addition, surplus labour moving into urban areas demands a social infrastructure which political considerations make it difficult to deny. Cases of deliberate promotion of a 'push' from agriculture being necessary to establish an early take-off are very rare. In most countries, because of the disorderly and massive rural-urban migration, the problem seems at the present rate of industrial development to be rather the reverse.² It is, on the contrary, within the framework of the

¹ Modern thinking on the subject had already received its impetus in wartime from Rosenstein-Rodan and Kurt Mendelbaum in relation to southern Europe. The quantitative exercises undertaken at the time were, of course, purely illustrative and could not take into account the institutional difficulties which were to arise in practice.

² Mellor is obviously correct in rejecting the Higgins thesis that as a general rule mechanization in agriculture and deliberate release of labour for industry are a pre-condition of take-off. This depends very much on the stage of development, but all

agricultural sector that surplus labour is most likely to make its contribution to the increase in capital formation and productivity. While it is true that the use of such labour is fraught with difficulty,¹ it constitutes a potential that is already being utilized productively in some countries where there are programmes which, though socially oriented, are increasingly proving their potential usefulness.²

To the extent that governments, in their appraisal of development projects, take account of the existence of surplus labour—regional, seasonal, and over-all—they promote a more effective use of resources. They do so in two ways. First, they are then in a position to make a more rational selection of projects in relation to factor scarcities (which in fact involves shadow pricing). Secondly, and possibly even more important, by providing increased employment they introduce a more positive psychological attitude to effort. This indirect impact has various facets. For instance, in the countries where the system of land tenure is defective, by offering alternative employment to small-scale operators in large land holdings, public works may serve as an inducement to landlords (who are thereby deprived of some of their labour) to rationalize their system of production.³ In addition, the very fact of a higher rate of employment acts as a general stimulant to lift the peasantry out of lethargy, on the condition, in democratic countries, that employment is rewarded by higher standards of consumption, which in itself of course evokes additional problems of phasing increases in supply. In this context, 'linked public works' have also the advantage of being a good subject for foreign aid in kind to the extent that this is available in the form of agricultural surpluses, and also to the extent that the increase in consumption caused by such projects is most likely to be in food.⁴

evidence seems to suggest that the exodus from rural areas *precedes* the increase in absorptive capacity of industry, particularly with a high level of underemployment both in secondary and tertiary sectors.

¹ Various authors, amongst which Myint in *The Economics of Developing Countries* Hutchinson, London 1964, and Pepelasis, *Labour Surplus in Greek Agriculture* have pointed out the dangers of over-simplification in the concept of disguised unemployment and the use of surplus labour, and rightly showed the need for reorganization within the farm if agricultural output is not to be reduced as a result of withdrawal. There is obviously need for a case by case approach but, by and large, the 'push phenomena' are in evidence in most of the developing world, and in many countries there seems to be an automatic adjustment of labour inputs and technology to the new situations. It is fair to add, however, that in some of the African countries, as also in eastern Europe, massive emigration from the countryside has, in the absence of complementary measures, led to a reduction in output.

² It is now apparent, however, that the drive for employment of rural labour has often been carried out on purely political grounds without due objectivity in the choice of projects, and mainly with the employment criterion in view. This obviously leads to strains on the economy, and misses the opportunity afforded by the existence of underemployment, that is, mobilization of resources towards higher output.

³ This argument is elaborated in F.A.O.'s *Mediterranean Development Project Overall Report* published in Rome, 1959, and T. Balogh, 'Agriculture and Economic Development—Linked Public Works', *Oxford Economics Papers*, N.S., no. 13, 1961.

⁴ But see below as to conditions attached to the use of surpluses for development.

Social capital is obviously only one of the essential elements involved in increasing agricultural productivity. To be effective, social capital must be accompanied by private investment and an effort to make use of the infrastructure provided. This implies measures both to increase technical efficiency and to provide incentives. Beyond a certain point, the relationship between such measures and the provision of social overhead capital is obviously not simply one of complementarity: in so far as these measures increase the demand for resources, they also compete for capital for investment purposes.¹ The complexity of the problem is multiplied a thousandfold by the mixture of motives which lie behind both indirect and direct government measures. To the extent that these motives are not explicitly stated, the issues become blurred and the choice of measures is likely to suffer. Rational planning of these measures is essential, therefore, not only to maximize output per unit of capital provided, but also to enlarge the aggregate supply of resources for development.

Consider, for instance, the gamut of measures usually quoted in this context: an adequate agrarian structure, an improved administrative framework, a rational tax system, a pricing system which gives farmers stability in expectations and adequate incentives, and adequate farm credit. It is a matter of judgement how far reform in all these fields must be applied under the specific circumstances prevailing in an individual country.

The improvement of the administrative framework is another essential prerequisite for increasing the productivity of capital and providing incentives for investment. However, it is likely to lead to increased pressure on resources, on scarce material talent, and also inevitably on consumption and on some of the investment in construction. In any case, an increase in the size of an investment programme will require an increase in the capacity of the administration to implement it. This may be achieved only to a partial extent by rationalization of the administrative machinery. It is most likely that it will involve increased expenditures. An essential improvement in administration is the removal of the divergence between investment programmes and current budgets, which is still too frequent in many developing countries and which results in provision for recurrent development expenditures either from external or internal sources being generally slight.²

While it is generally recognized that defective agrarian structures blunt

¹ For a discussion of the basic complementarities of capital investment with measures to improve the investment climate are: P. A. Reid, 'Investing in Agriculture', the *Fund and Bank Review*, vol. iii, no. iii (Sept. 1966), and also by P. A. Reid, 'Prospectives for Lending in Agriculture in the Developing Countries', *Journal of the Australian Institute of Agricultural Science*, September 1966. For an enumeration of measures and their impact on resources, see F.A.O.'s 'The State of Food and Agriculture 1960', *Programming for Agricultural Development*, pp. 126 et seq.

² Reid has frequently stressed the importance of this point. While it is true that considerable bilateral aid is devoted to supplement current budgets, the relationship between these budgets and development budgets is often tenuous and aid programmes rarely take into account the need for enlarged current expenditures.

incentives to greater efforts by farmers, particularly where it comes to the effective use of inputs, in the short term it may be possible to achieve high productivity of capital even without going the whole hog in rationalizing the *agrarian structure*.¹ It all depends on the *slack* in the system and how it can best be utilized. If the problem were only one of inducing increasing productivity, well-defined criteria could be applied. This is rarely the case. The objective of land reform, however, is at least as much political as economic. Combining these objectives requires a clear formulation of the problem and of its implications. It also requires due account to be taken of the costs and benefits of alternative solutions. Implementation of land reform, if it is not to lead to a reduction of output, involves additional expenditures by the government over and above compensation payments. Even though the latter might be termed transfer expenditures, they still represent a call on government funds, and hence reduce government investment possibilities. Systems may be devised to minimize the impact, and even compensation payments can be used as a means of increasing participation of private capital in investment in desired fields. Such arrangements would be difficult to work out, however, and their introduction is subject to political factors.

In addition to compensation expenditures the government needs to provide for basic services (extension, credit, marketing) if output is not to decline. Some of these might have been provided by large-scale landowners, but the extent to which in actual practice they will have done so varies greatly from case to case.

Taxation of agriculture, likewise, raises the problem of balancing the desire to induce a higher level of rural investment with the need to increase government revenue in order to provide for a higher level of social capital formation in agricultural and other sectors. A comparison of direct taxation in agriculture with that in other sectors conceals the effect of indirect taxation on prices paid by farmers and of the impact of a series of exemptions and protection of industry, which in effect have in a number of countries decreased the incentive to raise agricultural productivity.² Studies of this incidence and of its effects are badly needed and are essential tools of agricultural phasing. The relative absence of direct taxation in agriculture, and hence the resulting emphasis on indirect taxation in economies at an intermediate stage of development, is due basically to political factors such as the strength of the landowning class and consideration for smaller farmers. Difficulties of administering such taxes, given the frequent illiteracy of the peasants, historical codes of behaviour promoting tax evasion, and the existence of an important subsistence sector, also play a role. But they serve too as rationalizations, for in those countries, however

¹ In many of the southern European countries, considerable increases in agricultural production have been achieved, spreading throughout minifundia without consolidation.

² It may well be that this transfer of enterprise and incentives to non-agricultural sectors is justified on over-all economic considerations. The argument here is that government impact on agriculture as in other sectors requires explicit reckoning and that in the absence of this there is likely to be a lack of coherence in government measures.

low the average level of income, there is still scope for direct taxation as the extraordinary conspicuous consumption expenditures often indicate.¹ Policies are now being generally designed to include the agricultural sector within the tax orbit, and agricultural taxation as a means of mobilizing capital is becoming more important than it used to be.

Japan is often quoted as the classical example of a country where economic development, and more specifically agricultural development, was to a large extent financed out of taxation, a large part of which originated within the agricultural sector.² Taiwan is also of interest in this context. The relevance of the Japanese example, as Mellor has pointed out, is that the increase in taxation was made possible only by the concurrent growth of agriculture and productivity.³ It is also relevant that capital investment in agriculture was essentially of a 'widening' rather than a 'deepening' character, that the major advance was due to changes in technology, notably in fertilizer use, and that a large part of the farmers' increase in income was absorbed by taxation, with a consequently small increase in farmers' income. The problem is the extent to which the rate of marginal taxation can be increased without acting as a disincentive to greater effort and improved technology.

After a period in which it declined in importance, the system of land taxation based on potential productivity has once again received increased attention. Land taxes can be used both as a means of inducing higher productivity and as a means of increasing government revenue.⁴ Their advantages, provided there are frequent reassessments which make due allowances for such factors as inflationary pressures and changes in technology, are now well known. If related to potential in countries where large amounts of usable land are not put into effective use, and where profit incentives in the agricultural sector are not high enough to compete with potential profits from land speculation, they can induce pressure for better land use provided complementary conditions apply. They share with traditional 'poll' and 'hut' taxes the advantage that they are an inducement to commercialization where, as is increasingly the case, they are payable in cash.⁵ The difficulties of applying such taxes—particularly where records of land ownership and basic technical surveys are not

¹ See R. Goode, 'Reconstruction of Foreign Tax Systems', *Proceedings of the Conference of the National Tax Association*, 1951.

² See B. F. Johnson, 'Agricultural Productivity and Economic Development in Japan', *Journal of Political Economy*, December 1951, and 'Agricultural Development and Economic Transformation: A Comparative Study of the Japanese Experience', *Food Research Studies*, Stanford, November 1962.

³ J. Mellor, *Economics of Agricultural Development*, Cornell University Press, Ithaca, 1966.

⁴ For a vigorous advocacy of this view, see *The Development of Agriculture in Spain*, report of a mission organized by the International Bank for Reconstruction and Development and the Food and Agriculture Organization of the United Nations, Washington, November 1966. Professor Kaldor has also advocated a similar tax for Turkey.

⁵ Payment of land and other agricultural taxes in kind raises the complex issues of government trading in commodities and the administrative and marketing problems involved.

adequate—are enormous, but the major obstacle is the political vested interests often associated with large-scale ownership of land, which may still, provided the right conditions are obtained, be associated with high efficiency.

As an instrument of land reform, the land tax, provided (which is begging the question) it is established at an adequate level and adjusted at appropriate intervals, may not be altogether effective; it may not act as a substitute for other measures. In any case, if its productivity goals are to be achieved, it needs to be accompanied by parallel action in extension, credit, and marketing. It presents, however, considerable advantages over other types of taxation, particularly because it leads to the tapping of potential resources both in land and in capital. The progressive income tax has the advantage of equity but gives rise to only slightly less complex problems of administration; like the land tax it can have built-in incentives to further development by provision for special exemptions for improvements; this impact, however, is *post-hoc* rather than *propter-hoc*. The tax on gross output has the advantage of administrative convenience and is hence the most frequently applied, but it has the major disadvantage of discouraging the use of inputs. Contradictions between different objectives of government policy are most apparent in the case of export taxes. They are easy to administer, have a basic use for siphoning off inflationary pressures and for promoting investment in government capital (particularly where part of the proceeds goes into research and diversification, which assist in increasing productivity and thereby enlarging the tax base). In practice, however, they have often been so important a source of government revenue and indirect price control that they have been self-defeating and led to stagnation in the export sector, with consequent adverse impact on the balance of payments.

Because of the multiplicity of objectives, the impact of price and subsidy policies on capital formation in agriculture is even less direct than that of tax policies. Their call on resources can be substantial. For example, to be effective they need to be supported by investment in storage-buying depots near producing centres where farmers can have easy access and can count at least on getting official prices for produce. They also require financial resources for investment in stocks. Finally they require the widespread employment of staff to operate them. Since storage facilities and intermediaries would in any case be necessary in the orderly development of marketing, the cost of such storage and of supporting staff cannot be imputed *in toto* to the application of the price measures. In practice, however, it can be assumed that the over-all provision of such services will increase as a result.

There are three interrelated aspects of the indirect impact of pricing policies. First, their impact on the certainty of expectations of farmers and hence on investment decisions. Secondly, their influence on the terms of trade of agriculture versus industry, and hence their strength as incentives to investment in the rural sector as a whole. Thirdly, their influence on the pattern of investment within agriculture.

In the following we shall not discuss the case of generalized inflation which detracts from investment in higher productivity and causes distortions in the pattern of investment, but rather limit ourselves to changes in specific prices. It is now generally recognized that instability in prices is a major deterrent to increases in agricultural output and investment, both as regards annual and perennial crops. There is also general agreement that the pattern of production and land use is influenced by both the relative level of expected prices of specific crops and also by the relative level of certainty attached to those expectations. To the extent that there is non-specificity in agricultural inputs in developing economies, and that sensitivity to price changes, particularly in cash crops, is high, price stabilization measures in particular crops rapidly affect changes in the cropping pattern; hence the inducement to invest.

Price stabilization policies are inevitably related to the efficiency of marketing systems, and also to the extent to which the market and output for the crops concerned can be controlled—hence the divergence between export and domestic price policies. Such policies not only have stabilization as their objective; they often aim, for instance, at a sideways alteration of the terms of trade of either the farm *vis-à-vis*, in general, the rest of the community, or of specific groups of farmers *vis-à-vis* other members of the farm community. There are frequently inconsistencies between policies which seek to foster production, and protect consumers in the short term, and policies which are basically oriented by balance-of-payments considerations. There are also frequently basic contradictions between objectives for the promotion of specific crops and the system of subsidies (the classic example being the cases where wheat producers are given subsidies basically because they are depressed farmers, while the government objective is the promotion of livestock products in view of increased demand for meat).

To what extent is a policy of manipulating prices by subsidies or taxes relevant to output and investment decisions? It has been a matter of debate whether the price elasticity of supply for agricultural products in developing countries is significant or even positive.¹ Obviously this depends on the extent of profit motivation in the economy, as well as on the extent to which policies are supported by other measures and fall on favourable ground. Mellor² and E.C.E.³ consider such elasticities are on the low side. There is also, however, evidence (both in southern Europe and in other areas) that such elasticities, particularly in regard to specific crops, are not low, especially where there is an increase in the level of purchased inputs. However, generalizations are of little use in this context:

¹ See Mellor, *The Economics of Agriculture Development*, pp. 196 et seq. E. Ojala, *Programming of Agricultural Development and Implementing Price Stabilization and Policies in Asia and the Far East*, Rome, 1963.

² A distinction needs to be made between the elasticity of production to price changes, and the elasticity of supply to the market. This distinction is not always clear in Mellor's analysis.

³ *Some Problems of Agricultural Development: Western Europe*, Economic Survey of Europe 1960, Geneva, 1961.

the elasticity of supply depends on the relative level of prices. The supply function is far from being homogeneous, and the response depends on the nature of the shift whether it is downwards or upwards. Furthermore, the E.C.E. argument that 'at relatively primitive levels of farming technique, the clear advantages of more advanced methods, once seen, are likely to outweigh by far any decline in prices', is an argument which not only depends on the level of the decline, its starting-point, returns from inputs, but also makes basic assumptions as to farmer psychology.

Governments are also faced with decisions as to the relative importance to give to output versus factor subsidies. In so far as the objective is to attain higher rates of productivity, there is little doubt that there is a definite argument in favour of factor subsidies. It might well be that subsidies to inputs—particularly when the initial inertia is over but there is still some hesitation on unusual current expenditures—would give a better return than subsidies to outputs.

The extent to which input subsidies can be applied, however, still depends on the burden which the economy can carry, even after account is taken of their consequential impact. It is sometimes assumed that, as technology improves, and as the high profitability of current inputs appears secure to farmers, the subsidies can be withdrawn. The extent to which this is feasible depends not only on economic but also on political factors; the habit of receiving a subsidy is difficult to eradicate, and each subsidy has its political lobby to support it.

The limitation of subsidies is defensible not only on grounds of efficiency, but also on grounds of equity. In conditions prevailing in most developing countries, the supply of inputs is bound to benefit only a limited class. The effective use of such supplies is likely to be promoted the closer the individual beneficiary feels their cost to society. The waste in water, often with adverse effects on soil fertility, and with consequent problems of drainage, could well be prevented by heavier charges than those applied at present.¹

Investment is obviously directly affected by the flow of credit. The tendency to subsidize rural credit is perhaps even stronger than the tendency to subsidize prices. For one thing, subsidized credit gives the illusion of being easier to administer than subsidized output; for another, it is a natural reaction to the usurious rates of traders, landlords, and moneylenders which have plagued and still plague the economies of the lesser-developed countries; still another reason is the realization that the transition from a subsistence to a market economy cannot be effected unless there is an injection of liquidity in the system. Furthermore, determining the rate of institutional credit involves a totally arbitrary calculation as to the cost of capital to the economy. The assumption that the institutional rate must at least approximate the cost of administering the credit meets only part of the difficulty.

The basic economic problem is how to *raise* the rate of savings and

¹ The basic rule could very well be that after an initial period the charges would at least cover costs of operation and maintenance.

increase the flow of capital. In many peasant economies with heavy non-monetized investment 'self-financing' is still the major method of financing capital formation¹ in all fields of agriculture including livestock development. In fact, considerable progress has been made even in the absence of institutionalized credit. With technological advance, however, the need for short-intermediate and long-term credit is bound to increase. The problem then becomes one of what the desired monetary balance of the economy can carry. Coping with the seasonal pattern of production; facing crop failures in particular years; financing land purchase of progressive farmers; making it possible for such farmers to finance purchases from outside the agricultural sector of current inputs, equipment, and other working tools—would demand careful appraisal if only economic considerations were involved. But economic considerations are rarely unmixed. The fact that credit is bound in any case to be complementary and hence that its grant may allow diversion of resources to a series of other purposes (including conspicuous consumption) introduces even greater complexity into the process.

Rationalization of the system implies in the first instance a clear appraisal of the situation of the role of institutional versus non-institutional credit in relation to credit needs, a clear distinction between credit which is essentially designed for 'relief', and credit for productive uses. It is clear that in the political circumstance of most countries there is bound to be a limit to which the administration for credit can be nationalized. Credit institutions will, for instance, sometimes be called to undertake trading functions, and at other times be used as a channel for relief programmes. Provided these operations are kept *separate* and within limits and do not impair the efficiency of the organization, a gradual approach may be warranted. Rationalization also requires a rationalization of official credit institutions, autonomy in their day-to-day management with freedom from political interference; machinery for elaborating, appraising, and supervising programmes and projects can be clearly appreciated. It requires a strict observance of the rules of the game. Once it is accepted that the class which qualifies for credit is a privileged class, it follows that they have not only rights but obligations including that of repayment. In the determination of the rate of interest, it needs to be appreciated that the general terms under which credit is granted (the grace period, the scope of credit, the facilities for technical advice) are often more important than the rate charged for specific loans. Liberal credit, unless accompanied by caveats and an adequate framework can, as experience in many countries shows, be as much a curse as a blessing.

III. *Capital flow and the external sector*

The external sector affects capital flow and productivity in two ways: first, by the broadening impact of trade on the base of development, an

¹ See *Experiences with Agricultural Development in Tropical Africa*, Vol. I. *The Synthesis*, by John C. de Wilde et al., published for the International Bank for Reconstruction and Development 1967, pp. 198 et seq., and Myint, op. cit.

impact which is related to the terms of trade; and secondly, through the flow of foreign capital and know-how, public and private. The two are closely interrelated, and policies with respect to one often affect the effectiveness of policies with respect to the other.

There is some dispute as to the extent to which the terms of trade of agricultural versus industrial producers are the subject of a secular decline. There is little doubt that the market for some major commodities in world trade is relatively inelastic and that a technological change is a constant threat to their long-term prospects. Even the most favourable projections lead to the conclusion of a sizeable shortfall in foreign exchange if present income targets are to be fulfilled and propensities to import turn out to be at expected levels.¹ Furthermore, major swings in prices characteristic, especially of perennial crops, have a major destabilizing impact on the course of incomes, and in particular play havoc with investment programmes.²

These factors may be sufficient to justify attempts to provide for greater over-all diversification in the economies of many developing countries with a high ratio of foreign trade to national income, and even more so for those countries where foreign-exchange receipts are largely dependent on one or two commodities. The limits to diversification, however, in terms of possible alternatives are also considerable—for specialization in foreign trade in fact had its origin in the possibility of directing labour from less to more profitable uses where comparative advantages in natural resources could be exploited. Furthermore, diversification is to no small extent dependent on the degree to which capital can be obtained through trade in traditional exports which broaden the base of the economy.

Marketing boards to some extent assist in raising the bargaining power of producers in certain countries; but unless they take due account of the world situation and those of competitive producers, they are bound to fail. Their success in the ultimate analysis depends on the efficiency of their administration, on the combination of technical advisory functions (where these are not otherwise provided) with their trading functions, and above all on the balance which they can achieve between the basic objective of providing incentives to the peasantry to achieve output and productivity, while ensuring competitiveness on the world market, and of providing capital funds for development. There are examples of many countries with a high rate of savings in periods of export booms, and a low rate of growth in subsequent periods.³ This is not necessarily a condemnation of the usefulness of marketing boards as such, but rather of the broader policies within which they are supposed to operate. In any case, whether

¹ Studies currently being undertaken by F.A.O. show that by 1975, even if the highly industrialized countries maintain a high rate of growth, the possible rate of increase in agricultural exports from developing to industrialized countries will not exceed 0.5 per cent per year.

² The supplementary measures proposed by the World Bank for compensatory financing may, if implemented, lessen the impact of these fluctuations.

³ In fact with an average rate of growth lower than that of non-export oriented economies.

they are a suitable type of organization or not depends on specific factors affecting trade and production in particular commodities.

The role of import duties and policies is also of major importance. For many of the developing countries, especially those at intermediate levels of development, strict import controls on agricultural commodities have been acting as a deterrent to increased investment for diversification in desirable lines and to higher productivity.¹ In a wider perspective, the problem is rather the combined incidence of taxes on agricultural exports; in short, on the terms of trade of farmers. The absence of quantitative studies of this combined impact makes for an incoherent trade policy, and *a fortiori* for an incoherent policy of over-all development.

Ultimately the extent to which trade will affect capital formation in agriculture will depend on the broad pattern of international trade relations. The difficulties in reaching specific commodity agreements through U.N.C.T.A.D. and F.A.O. show that there is still a very long way to go. Difficulties in this respect are due not only to the importers, but also to divergence of interests among producers. The G.A.T.T. negotiations and further work by all concerned may assist to some extent.

In many of the developing countries, the stimulus to export production has come from foreign interests. In some such countries export-import firms have stimulated small farmer production for export by advancing credit and collecting and processing their output, and also by selling them imported goods which acted as an incentive for increased output. In others, foreign firms have established plantations with considerable investment, often operating them with imported labour. The export sector in these countries, especially in pre-independence periods, has in one way or another, had access to foreign capital under conditions which differed from those prevailing in the rest of the economy. The extent to which these export activities have had an impact on over-all development has varied. Generally, however, the diffusion has affected plantations rather than small farm production, particularly as plantations tend to be capital-intensive.

With independence, there has been a reaction to these foreign activities, partly for purely nationalistic motives, and partly also with the purpose of diverting to the countries concerned an increasing share of profits and trading margins, through taxation and royalties. An additional consideration has been the desire of governments to have more direct influence on the allocation of resources between production for export and production for the home market in the face of depressed world demand. The basic problem which faces these countries is how to continue to secure management, entrepreneurship, and capital in their export sectors, if domestic income is not to decline as a result of these restrictions on foreign enterprise. Generalization is even less possible in this case than in others. There are, however, instances of interesting arrangements whereby peasant or plantation production is being combined with external private or public capital (World Bank and/or other agencies) and also foreign

¹ Agricultural import policy in Spain is a classical example.

know-how. In one palm-oil project, for instance, a semi-governmental agency charged with agricultural development in a specific region of a particular country is to benefit from foreign aid which it will channel to co-operatives. The agency will benefit from foreign technical assistance on such matters as fertilizer application, pest control, and will also—a most significant feature—advise on the integration of food crops with the palm-oil project. Other projects are also currently being considered where plantation development under national auspices is geared to food processing installation financed or managed by foreign firms. The range of possibilities is enormous, especially where there are government guarantees, and a *modus vivendi* can be reached on the terms to be given to foreign capital. A study of such projects organized under various auspices would certainly be of interest. The joint activities of the F.A.O. and the World Bank, and of F.A.O. under its Co-operative Programme with industries is of interest in this respect.

According to the figures of the Development Assistance Committee of O.E.C.D., the total flow of official aid resources to developing countries in 1965 was, on a nominal basis, less than $\frac{1}{2}$ per cent of the gross national product of the donor countries. Further more, the net flow of aid has remained static in recent years and it is most uncertain whether the situation will improve, particularly in view of the increased indebtedness of some major developing countries. It is also significant that out of the total flow of aid only 7.5 per cent went directly to agriculture—although admittedly 'programme' aid, which was not an inconsiderable part of the total, made it possible to release funds for agricultural development, and there were also a number of projects in transport and general infrastructure which were of indirect benefit to agricultural development.

Be that as it may, it is clear that aid to agriculture—a bare \$800 million annually¹—has been of a relatively small order of magnitude. The question has been raised as to whether technical and financial assistance in agriculture has had any impact at all, considering the vastness of the world food problem, especially if present trends are allowed to continue. The question ignores the obviously marginal role of agricultural aid *vis-à-vis* national effort and policies: it ignores the role of trade in determining the course of development; it ignores the dimensions of the problem. It ignores the very substantial achievements of technical and capital assistance to agriculture in some key countries such as Mexico, Korea, Taiwan, and the major change in the political attitude to agriculture, e.g. in the Indian sub-continent where the food problem is most acute. The more fundamental question is whether the situation in the developing countries would be worse if there were no external aid to agriculture. There is little doubt that it would be.

Within the framework of a relatively gloomy picture for aid, there are certain changes in the attitude to aid to agriculture which give some ground for optimism. One significant change in this respect has been that in the attitude of the World Bank group (I.B.R.D., I.D.A., and I.F.C.)

¹ This refers to commitments.

leading to an increased emphasis on agricultural lending, with greater attention than heretofore on raising farm productivity. World Bank lending to agriculture has increased substantially since 1963/4 and more importantly the pattern of such lending, its distribution between basic infrastructure and on-farm improvement, has altered in favour of the latter. In co-operation with the F.A.O. through the F.A.O./I.B.R.D. Co-operative Programme, an important pipeline of projects has been established, which is now running at \$400 million.¹ Efforts are being made to reorient U.N.D.P. projects towards eventual investment by external and internal sources. At the same time, F.A.O. has negotiated an agreement with the Inter-American Bank, and negotiations are underway with the Asian and African Banks for co-operative arrangements.

The same increased emphasis on agriculture is also apparent in bilateral programmes. Not only is greater attention being paid by donor countries to agricultural aid, but recipients are now showing greater eagerness to receive aid in this sector. Greater attention is also being paid to the co-ordination of assistance to agriculture and to other measures designed to raise its effectiveness. Broader questions are inevitably involved, such as the respective share of bilateral and multilateral aid. Given the magnitude of the task, the main problem would appear to be the extent to which the two types of programmes, by complementing each other, can increase their effectiveness.

The framework of financial assistance to agriculture in the developing countries can be determined only on a case by case study of the individual countries concerned, demanding an over-all approach. Such studies are being undertaken by the World Bank, often with co-operation from the F.A.O. as regards the agricultural sector. In addition, there is need for a general framework to relate the problems of world agriculture particularly to trade and output patterns as they emerge from present development programmes and from trends in international commodity markets. A framework of this kind is now being devised in F.A.O., in co-operation with other agencies—the Indicative World Plan for agriculture.

Within this framework, steps to increase the effectiveness of aid are now easier to take on the basis of past experience. In the first place the need for a close association between financial and technical assistance is being increasingly appreciated. This association is necessary at the stage of project and programme formulation to give concreteness to technical advice, and it is also necessary at the stage of execution since many countries still lack basic expertise in implementing key projects, particularly where changes in techniques are involved. It is now apparent that small piecemeal technical assistance² is simply not a sufficiently effective tool to

¹ The extent to which this will lead to actual investment, however, depends also on the possibilities of replenishment of I.D.A. now being discussed.

² For a discussion of technical assistance experience to agriculture, see *Some Principles for Agricultural Development* address by O. V. Wells, Deputy Director-General of F.A.O. to the Ninth World Conference of the Society for International Development, Milan, June 1967.

increase materially the aggregate agricultural productivity or over-all aggregate agricultural production. If technical assistance is to be effective it must be directed at a package of practices with due regard to economic considerations; and it must also be associated not only with increased supplies of capital but also with increased supplies of current inputs.

It is in this latter context that the Director-General of F.A.O. has brought out a proposal for the establishment of a Production Resources Programme designed to increase the supply of such resources as fertilizers, pesticides, and improved seeds, moving through bilateral and multilateral channels in an annual equivalent of \$500 million. The programme which is now under study in F.A.O. would of course envisage close co-operation with other bilateral and multilateral technical and financial agencies whose co-operation in its implementation would be a condition of success.

The problem has often been posed as to the future of food aid in years to come, particularly at a time when food surpluses are declining and attention is being concentrated on assisting the development of food production. Furthermore, it is being pointed out that in some cases, assistance in food aid has resulted in depressing local production efforts. The magnitude of the problem is such, however, that the continuing need for food aid is immense. If ways can be found of mobilizing potential surpluses (in food as in production requisites) with the net result that total aid is thereby increased,¹ the productivity of agriculture in the developing countries will thereby be increased. Quite apart from the cases of emergency aid, food aid can be a most potent factor in development as World Food Programme experience already shows. Provided it is conducted within a proper conceptual framework such as the principles of surplus disposal—that is provided it is granted as a stimulant to local production and with suitable safeguards to the normal channels of trade—food aid can, by assisting in the implementation of such projects as rural settlement, afforestation and livestock development, widen the investment horizon of the developing countries, minimize the risks of investment programmes leading to inflation, and at the same time increase over-all welfare.² The decisions to establish the World Food Programme on a continuing basis, and the agreement within the Kennedy Round to constitute a 4.5 million ton food-aid programme are hopeful signs in this direction.

IV. *Concluding remarks*

In these notes, which are meant to serve as a background to discussion, the main focus has been on the need to treat capital formation in agriculture in relation to other factors. A systematic discussion of the productivity of capital, and the impact of governments on capital formation

¹ And hence tied aid in these respects becomes additional, the assumption being that its marginal cost to countries is less than the average cost of untied aid.

² See *Development Through Food*, Report by the Director-General of F.A.O. to the Thirty-Second Session of E.C.O.S.O.C., Freedom-from-Hunger Campaign, Basic Study No. 2, F.A.O., Rome, 1961, revised edition 1962.

through policy measures having a multiplicity of objectives, likewise requires consideration of the whole complex of government policy, motivation, and limitations. An attempt has been made therefore to stress the need for coherence in the choice of various incentives and measures by governments. However, within this coherent approach, stress has been laid on selectivity, given the scarcity of means, material and human. To achieve such coherence and selectivity, it is necessary that both the objectives and the impact of individual project measures are made explicit, which is now rarely the case.

In the external sector, where there are also often contradictions in approaches, such an explicit picture is equally necessary, both as regards trade policies and as regards external aid. There is also in this respect, as for all aspects of the problem, a great need for a pragmatic approach to take maximum advantage of difficult conditions of trade and limited aid.

GROUP O. REPORT

THE discussion was a far-ranging one in line with the paper presented. No clear disagreement with Mr. Ergas's argument was put forward; but dialogues between discussants and the speaker developed in line with participants' experience.

The discussion on land reform took the line that the purpose of some extreme measures introduced in various countries in the name of land reform might have been achieved through a land-tax system. In some countries these and other taxes on primary producers were already too heavy, but in others the political power of the peasantry inhibited governments in seeking measures to raise the productivity of land. The Australian system of land valuation was fair and included regular revision. The unimproved value of farm land so obtained was the ideal for a land tax. Against this it was argued that such a system neglected the potential value of such land.

Aid programmes were held to require still too much by way of a local contribution. Was food aid to benefit the donor country or the recipient country? The answer suggested was that the real test for aid was whether it increased the total supply of resources or not. Food aid was particularly important to recipient countries as it was a buttress against famine and also anti-inflationary in times of shortages. As to the local contributions to technical assistance programmes, the recipient countries still had to decide whether they wanted aid or not.

Forecasts for indicative planning purposes came in for criticisms on the grounds of inaccuracy. On the other hand, it was argued that only through projections and forecasts was it possible to anticipate some of the problems which lay ahead.

The low proportion of aid going to the agricultural sector and of farm income reinvested in agriculture caused some concern. On the former some reallocation was necessary and there was value in procedures whereby

investment in complementary inputs is linked to major capital investments. Changes in the infrastructure of developing countries tended to raise the capital output ratio. As economies developed, the ratio tended to fall. Reinvestment tended to be reduced by increasing consumption. Mr. Ergas was inclined to think that various forms of aid did have a sharp effect on consumption, but the important thing was to get a greater proportion of the population into the wage economy.

The long period between planning irrigation projects and the time when settlers became fully proficient in the use of water, combined with local high rates of time preference, gave many projects negative present worths. Only small projects which could be launched fairly quickly escaped this dilemma. Would any major dams ever be justified on these criteria in less developed countries? A new attitude to time preference was necessary and farmers should be asked to provide for their sons' future. On the other hand it was stressed that determining the social rate of return was essentially a problem of Government choice, and the role of Government was to counteract the effects of high interest rates in such societies.

Several questions were raised with regard to the flow of capital into developing countries and expatriate behaviour. It was held that overseas firms tended to use imported material at higher cost drawn from the parent company. This tended to lower the apparent profit of the local company. There was a conflict between protection devices to allow industries to develop and the repatriation of profits. Was there a need for protection under such conditions? Foreign firms in the processing and buying area for local crops and fibres were seen as behaving monopolistically to small producers. On the protection issue, some incentives had to be provided to attract foreign capital; foreign firms were not philanthropists. As to the import policies of expatriate firms, the test was simply whether the total stock of resources was increased.

Among those contributing to the discussion in addition to the opening speaker were: Colin Clark *U.K.*, C. H. Bonte-Friedheim *Kenya*, F. Popping *O.E.C.D.*, J. Ashton *U.K.*, J. Klatzmann *France*, R. Bićanić *Yugoslavia*, E. N. Kihara *Kenya*.