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THE SHIFTING FORTUNES OF AGRICULTURE

I. THE GENERAL SETTING

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THE fortunes of agriculturists depend not only upon the prices they receive but also upon their productivity. If real prices halve but productivity doubles, they are no worse off than before. In practice, farmers are interested not only in their own absolute standard of living, but also in how their earnings compare with earnings in other occupations. So, in comparing members of the same community, the terms of trade which matter are not the commodity terms of trade but the factoral terms of trade.

The behaviour of the factoral terms of trade depends on three movements:

- (a) the comparative rates of growth of demand for agricultural and for non-agricultural products;
- (b) the comparative rates of growth of productivity in agricultural and in non-agricultural industries; and
- (c) the mobility of the population into and out of agriculture.

The balance between these different rates of growth is so different in different phases of economic development that it is not feasible to speak in the same breath about the newly developing and the advanced countries. Broadly speaking, the advanced countries produce too much food while the newly developing countries produce too little. I propose, therefore, to speak separately about these two groups. It is not possible in 1958 to say anything about these matters which is both startling and true; I shall make only some random introductory remarks.

The Role of Agriculture in Economic Development

The economic development of most countries is unbalanced, in the sense that not all sectors come alive and show vigorous growth simultaneously. From the point of view of the role of agriculture in economic development we may distinguish three cases:

- (1) where development begins outside agriculture, or
- (2) where development begins with agricultural exports, or
- (3) where development begins with greater productivity in food for the home market.

We can dismiss the third of these cases because it is seldom if ever self-sustaining. Since the elasticity of demand for food is less than unity, an increase in home food production when other sectors of the economy are stationary is almost certain to drive the farmers bankrupt. It is true that at low levels the farmers may eat nearly the whole of their extra production so that they may be better off in terms of food, even though the increase in their marketings causes them to have less of other commodities. It is also true that the rest of the economy benefits from the reduction of food prices; but since this means selling less to the farmers, the effect may be to increase urban unemployment rather than to stimulate non-agricultural production. One can conceive of a case where economic development begins with increased productivity in food and is sustained because farmers move rapidly out of food into other occupations as their productivity rises; but I cannot think of any case in history where the initiative in development (as distinct from the response to development) has been taken by the food farmers and has been sustained. I suspect that Malthus was right in thinking that the only long-term effects would be that more of the farmers' children would live, and that equilibrium would be re-established with a larger population.

The farmers' position is much more hopeful if development begins outside agriculture. This is quite common. Minerals are discovered, or new technologies are applied to manufacturing industry, or a tourist trade develops, or shifts in trade favour a particular port, or some other stroke of fortune stimulates the non-agricultural sector. This in turn generates an increase in demand for agricultural products, and so development spreads from sector to sector. Ricardo believed that this could not sustain itself because the failure of food output to grow adequately would turn the factoral terms of trade against the non-agricultural sector and so stop its expansion. Indeed, I believe that we have here the main reason for the very slow growth of manufacturing industry in India and China during the past century, compared with Japan where increases in agricultural productivity have been spectacular. Similarly, agricultural stagnation helps to explain why French manufacturing industry made so little progress before 1914, compared with the rest of western Europe.

However, Ricardo did not tell the whole story, since he was writing of the closed economy. The open economy can import agricultural products to match an expansion of industrial output and employment. So if one can import food, one can expand the other sectors of the economy even while agriculture stagnates. There is no

difficulty in financing imports if the development is for the purpose of expanding exports, visible or invisible, such as the opening up of mines, or of a tourist trade. But if the emphasis is on industrial production for the home market, the resulting increase in agricultural imports produces a balance of payments crisis, as in contemporary England and in contemporary India, and then forces the nation to adopt one or more of three policies: to cut investment, which is the English and the Indian solution and leads back to Ricardian stagnation, or to make a big drive to export more manufactures, which is the German and Japanese solution, or to raise agricultural productivity as rapidly as possible.

The obstacle to the third of these solutions is mainly psychological. We know how to increase agricultural productivity in newly developing areas—by spending on water, on the distribution of high yielding strains, on agricultural extension, and so on—at a cost which is a fraction of what governments spend on their other programmes. Governments are beginning to realize that food production is as important as anything else, but there is still hardly any country in Asia or in Africa where the Ministry of Agriculture is occupied by a senior cabinet minister.

If development begins with an increased supply of agricultural exports, the country does not run into these awful balance of payments difficulties, partly because the supply of output from other home sectors is fairly elastic in response to farmers' demands and, even more importantly, because the exports provide the foreign currency with which to pay for imports. Countries which begin this way will have balance of payments deficits if they live beyond their incomes, especially if they borrow abroad more than their incomes can support; but they have no balance of payments problem if they live within their incomes. On the contrary, since the marginal propensity to import is less than unity, and since there is a time lag in the multiplier, such a country, if living within its means, would always tend to have a balance of payments surplus. This is the main reason why virtually nothing was heard about balance of payments crises during the seventy-five years before the First World War although this was a time of rapid development all over the world; whereas these words are on everybody's tongue today. In the former period development was concentrated in export sectors; whereas nowadays nearly every country plans for home demand, for public utilities, and for public services, but forgets about exports. Since development always increases imports, one of the most important chapters in any development plan is that which tells what is to be

done to increase exports, whether of manufactures or of agricultural products or of services.

Though development through agricultural exports works wonders, it has also its disadvantages. A well-known disadvantage is the fact that it discourages manufacturing industry. True, it provides demand, but this demand is easily met by imports. At the same time, it creates the wrong atmosphere for industrialization. Everything is geared to agricultural exports—research, training facilities, public utilities, representation of vested interests in the legislature, and so on. To get money spent in ways that are favourable to manufacturing industry requires a great effort in these circumstances. All this is well known and generally accepted. It is merely an extension of the old ‘infant industry’ argument.

An even more serious disadvantage, in tropical countries, is the difficulty of getting favourable terms of trade for agricultural exports. Tropical agricultural exports are small in relation to agricultural production as a whole; the main output is of foodstuffs for home consumption. Hence the supply is very elastic. The incomes of farmers producing for export cannot rise significantly above the incomes of farmers producing for the home demand. Naturally there are lags, frictions and some inelasticities which modify the argument and create temporary or permanent gaps between home and export incomes, but the two are chained together. The incomes of farmers producing for export are determined not by their own productivity but by the productivity of the food farmers, which is very low in comparison with the productivity of food farmers in the temperate zones whose incomes are linked in turn to those of industrial producers in the temperate zones. We have then the following relationship. Suppose that temperate farmers earn 60 per cent. as much as industrial workers and produce eight times as much food per head as tropical farmers. It will then follow that the income of tropical exporters of agricultural products cannot be much more than $7\frac{1}{2}$ per cent. of the incomes of industrial workers in the temperate zones. However much productivity may rise in tropical agricultural export crops, the terms of trade will always adjust themselves to keep down the farmer’s standard of living.

It follows that tropical countries cannot rely for major development solely on incomes derived from agricultural exports. Neither can they become prosperous simply by producing more food for home consumption since, in the absence of expansion in other sectors of the economy, this would merely bankrupt the farmers. They must look instead to balanced development. If productivity and invest-

ment are raised in all sectors, the growing manufacturing and service sectors will absorb both an increasing output of food and also agricultural labour rendered surplus. At the same time the real incomes of agricultural exporters will rise as the gap between food productivities in the temperate and the tropical zones closes.

I do not rule out the possibility that the people of one small country may grow prosperous by raising their productivity and exporting more agricultural products at constant prices; but the tropics as a whole cannot do this, and improvements in the export sector spread fairly rapidly from one tropical country to another. Neither do I neglect the fact that time-lags in supply may bring temporary windfalls, as to the cocoa producers today. But it remains true that a general improvement in tropical terms of trade will occur only when there is an all-round increase in tropical productivity in all sectors for home consumption.

The Role of Mobility in Agricultural Adjustment

This brings me to the problems of the advanced economy since, from the point of view of this discussion, the distinction between the undeveloped and the advanced country is that in the latter one can normally expect a substantial increase in agricultural productivity per man from one decade to the next. The starting-point of farmers' troubles in these countries is the fact that the demand for food tends to grow less rapidly than the supply; whereas the starting-point of the planners' troubles in newly developing countries is that the demand for food grows more rapidly than the supply.

It is a well-established proposition that consumers' expenditure on food rises less rapidly than income. There is a little doubt about this in poor countries, but no doubt in wealthier countries where the average daily intake per person exceeds, say, 2,500 calories. Farm receipts rise even less rapidly than consumers' expenditure on food. As incomes rise, consumers want their food prepared and served more elaborately; it must be processed, or preserved and served out of season, or brought from the far corners of the earth, or served in restaurants with music. Hence the 'value added' after it leaves the farm becomes an increasing proportion of the whole, to the increasing disgust of the farmer. The farmer's only consolation is that as incomes grow the wastage of food by the average household seems to grow even more.

The reverse happens to the agricultural raw materials; they are more and more carefully economized. The income elasticity of demand for manufactures exceeds unity in the poorer countries,

though it is probably not greater than unity in the richer countries where increases in income go much more to services than to purchasing further knick-knacks. This high income elasticity is favourable to agricultural raw materials, but it is not decisively favourable. In the first place, since raw materials for industry are only a small part of agricultural production, the elasticity of supply is high, and prices are determined more by what is happening to food prices than they are by the demand for raw materials. Secondly, there is continuous economy in the use of raw materials and especially in the utilization of by-products. And thirdly, raw materials are menaced all the time by synthetics, which are a means of substituting cheaper and more abundant raw materials for more expensive ones. The only thing the farmer can say in praise of synthetics is that they tend to stabilize his market. For these synthetics are often made by monopolistic industries which hold prices more or less constant through boom and recession. Thus the price of rubber is now fairly stable after two decades of wild confusion; and the emergence of detergents seems similarly to have reduced the fluctuations in the prices of vegetable oils.

If the demand for food grows slowly while productivity grows rapidly, the terms of trade must move against the farmer unless the proportion of the population engaged in agriculture contracts. Poets and other romantics have always deplored this change but it is inevitable in the arithmetic. So far as the agricultural economist is concerned, the main remedy for the farmer's ills must always be to have fewer farmers.

The speed with which the proportion must contract depends entirely upon the rate of growth of consumption per head of population and the rate of growth of productivity per person in agriculture. The required contraction is greater in rich than in poor countries. Thus if consumption per head grows by 0.5 per cent. per annum and productivity by 3.0 per cent. per annum over twenty years, the proportion must contract by 37 per cent., i.e. the proportion of the population in agriculture must fall from, say, 20 per cent. to 13 per cent. On the other hand, in a poor country, where consumption can grow by 1.0 per cent. per annum, and productivity, say, by 2.0 per cent. per annum, the proportion contracts over twenty years by only 18 per cent., or, say, from 60 per cent. to 49 per cent. of the population.

Moreover, the difficulty of making this contraction depends upon how rapidly population is growing (though this does not affect the required proportions). If population is growing only by 1.0 per cent.

in the wealthier country, to reduce the proportion in agriculture from 20 to 13 per cent. in twenty years means that the absolute number in agriculture must be reduced by 24 per cent. Whereas, in the poorer country, if population is increasing by 2.0 per cent. per annum, a fall in the proportion in agriculture from 60 to 49 per cent. is consistent with an increase in the absolute number by 22 per cent.

These calculations illustrate the point that in a closed economy the farmers would have a harder time in a rich country than in a poor one, because of slower population growth, smaller increases in food consumption per head, and faster increases in farm productivity. However, there is no closed economy. In practice most of the world's farmers, with the notable exception of North American farmers, would stay reasonably prosperous if imports of food were prohibited. What troubles them is neither the slow growth of demand in their countries nor the speed with which their own productivity is rising, but the rising tide of supplies in a very few other countries.

The international division of labour requires that countries which are short of arable land should import food and export manufactures. Thus Britain, Germany, Japan, India, China, Java, and one or two other countries should export manufactures, while North America, Africa, S.E. Asia (excluding Java), and others should import manufactures and export food. Alas, the international division of labour does not have its way.

The main reason why the international division of labour does not have its way is that food is too cheap, i.e. at current prices farmers' real incomes are substantially lower than the real incomes of other occupations. This causes food-exporting countries to be anxious to industrialize rather than continue exporting food, and causes food-importing countries to try to keep imports down for the sake of their own farmers.

Now food is too cheap because farmers are not sufficiently mobile; agriculture contracts too slowly. In the poorer countries of the world this is primarily due to lack of opportunities outside agriculture. Not enough investment is occurring in manufacturing industry or in other sectors to draw off the rural surplus. However, neither Asia nor Africa suffers from a surplus of food. In the over-populated parts of Asia the rural surplus should be drawn out of agriculture; but not in order to reduce the food supply, which would, by definition, not be affected. The problem of these countries is simultaneously to increase food supplies while finding other work for the rural surplus. Africa has no rural surplus, except in a few small areas; but neither has Africa, at present, a surplus of food. The African problem is to

start an upward movement of productivity, so that other sectors of the economy can be expanded, without running short of food.

It is in the other continents, especially in North America and in Europe, that the immobility of farmers is keeping down farm prices, and here the cause is not failure of other sectors to expand, but the unwillingness of farmers to move. Investment proceeds so rapidly in these parts of the world that even the largest conceivable exodus from farms to towns would be snapped up in a very short time, just as Western Germany has absorbed millions of refugees. It is true that demand does not grow steadily; there are Kitchin, Juglar, Kuznets, and even possibly Kondratieff cycles. Farmers are used to having a decade of prosperity succeeded by a decade of poverty. Nevertheless, in times of prosperity the non-agricultural sector can absorb all who want to leave farming. If there are still too many farmers, it is because too many people want to be farmers.

I doubt whether this problem is capable of solution. There will always be occupations which attract too many people—farming, teaching, shop-keeping, music, acting, and many others—and the economy will always retaliate by paying people in these occupations less than they could earn in others. They, in their turn, resenting this, will do whatever they can to get higher rewards, by restricting entry to their trades, by tariffs and quotas, by parity-price formulas, or by any other regulative device for which they can win acceptance. Their philosophers—in our case the agricultural economists—will wrangle among themselves over these devices, some supporting, others denouncing, and yet others confining themselves to measuring. This is what we have assembled here to do, and I hope that you will find enough material in this paper to make a start.

II. THE EXPERIENCE OF THE MORE HIGHLY DEVELOPED COUNTRIES

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IN viewing agriculture in the developed countries in retrospect, I would like to emphasize certain fundamental relationships or facts as follows:

First, in the developed countries farm families have apparently shared fully in the growth of real *per caput* income over the past century.

Second, in most developed countries, with certain exceptions, the return to labour in agriculture has been, and continues to be, below the return to comparable labour in the rest of the economy.

Third, in most developed countries there is a considerable disparity in average incomes from one area to another within the same nation.

Fourth, the decline in the relative importance of agriculture in the national economy and, in many cases, the absolute decline of farm employment have been a fundamental factor in the economic growth of each of the developed economies.

I

In general, most agricultural economists are critical of the way the economies of developed nations allocate resources and incomes between agriculture and the rest of the economy. In accepting this critical attitude, many of us may be guilty of overlooking long-run developments of greater significance than the problems of the moment. I refer here to the quite definite body of evidence, drawn from the experience of several nations, that farm people have shared fully in the long-run growth in *per caput* real income in the developed economies. In other words, the functioning of markets, primarily factor markets, has been such as to result in real-income increases for farm people of the same order of magnitude as is enjoyed by persons in the rest of the economy. Thus, despite the low income elasticity of demand for farm products, the rapid adoption of technological change, the low price elasticity of demand, and the higher birth-rates in rural areas than in urban areas, farm people have enjoyed the fruits of economic growth.

While much more work needs to be done before we have an adequate picture of the long-run trends in farm and non-farm incomes, in recent years Thomson at the University of Chicago, Bellerby and associates in Oxford, and the International Association for Research in Income and Wealth, under the leadership of Simon Kuznets, have added substantially to our knowledge.

Table I presents the results obtained by Proctor Thomson for the United States, France, and the United Kingdom for the present century. These data clearly indicate at least long-run stability in the relative income position of farm people and may well be consistent with some improvement. While there has been some loss in the relative income position of farmers in the United Kingdom since the early 1940's, it may be noted that in 1952 the *per caput* income of farmers was 93 per cent. of the *per caput* incomes in all other occupations, while in 1900 the ratio was about two-thirds.¹

¹ Food and Agriculture Organization of the United Nations, *Agriculture in the World Economy*, Rome, 1955, pp. 54 and 58.

Data are available for Denmark for the period from 1870 to 1952 which permit a comparison of net domestic product per worker in constant prices. While this is not quite the same thing as net real income per worker, it is reasonably close. The decade ratios between

TABLE I
*Relative Earnings of Workers in Agriculture to Workers in Industry,
United States, France, United Kingdom*

	United States		France†	United Kingdom§
	A*	B†		
1900-9	0.62	..	0.91	0.57
1910-19	0.73
1920-9	0.54	..	1.00	0.56
1930-9	0.55	..	0.80	0.72
1940-9	0.81	0.52	1.12	1.26
1950-4	..	0.52
1955-6	..	0.45

* Average annual earnings of human agent in agriculture (full-time units) divided by average annual earnings in manufacturing (standardized for differences in age, sex, education, and racial composition but not adjusted for differences in cost of living). See Proctor Thomson, *The Productivity of the Human Agent in Agriculture: An International Comparison*, Ph.D. thesis, University of Chicago, table 17.

† Ratio of *per caput* income of farm population to *per caput* income of non-farm population. Includes non-agricultural earnings of farm population. U.S.D.A., *Farm Income Situation*, July 1957, p. 24.

‡ Average annual returns to human agent in agriculture (full-time unit) divided by average annual earnings in industry. Thomson, op. cit., table 33. Note that the years covered are 1901-11, 1921-9, 1930-9, and 1946-8. No adjustment was made for differences in cost of living.

§ Average annual returns to human agent in agriculture (full-time unit) divided by average annual wages in industry. Thomson, op. cit., table 45. No adjustment was made for differences in cost of living.

the net domestic product per worker in agriculture and other industries (1929 prices) for the period 1870-9 to 1900-9 are 0.66, 0.57, 0.54, and 0.53.¹ Thus some decline may have occurred during the period of increasing competition from overseas areas, and there is evidence of a similar phenomenon in the United Kingdom.² For 1921-9 the ratio was 0.48, then 0.66 in 1930-9, 0.70 in 1940-6, and

¹ Kjeld Bjerke, 'The National Product of Denmark, 1870-1952', *International Association for Research in Income and Wealth, Income and Wealth, Series V*, London, 1955, p. 126.

² J. R. Bellerby, *Agriculture and Industry, Relative Income*, London, 1956, ch. iv.

0.84 in 1947-52. Thus there was a quite substantial increase in the relative income position of Denmark's farm people.¹

Bellerby presents data for the Netherlands indicating that the ratio of wages of agricultural to industrial workers has increased from about two-thirds for 1909-12 to unity in 1952. These data are quite consistent with the change occurring in Denmark.² Similar data for Sweden indicate rough stability in the relative wage rates for 1861 through 1949, with the highest ratio occurring in 1945-9 (0.64).³ In New Zealand, the ratio of agricultural to industrial wage rates has apparently remained fairly constant or risen slightly since the last part of the nineteenth century.⁴

Many objections can be made to the above comparisons. In most instances, the data have not been adjusted for differences in age and sex composition, educational attainment, cost of living and degree of full-time work or the extent of unemployment. For present purposes, only changes in such characteristics over time are relevant. Thomson's estimates for the United States did attempt to correct for such changes and, to some extent, corrections have been made in certain of Bellerby's estimates. Where the adjustments have been made, there does not seem to be any significant trend in the effects from one period to another. Thus it seems reasonable to assume that the more crude comparisons do not distort the long-run comparisons of relevant earnings.

In the developed countries, farm people have shared in economic growth in three other ways. First, the difficulty of physical labour has declined on farms in much the same way as in the rest of the economy. Second, the amount of time worked (per week or year) seems to have decreased in much the same way as in urban employment. At least this is the impression one gets from the available information for the United States and the United Kingdom. Third, there has been a significant decline in the proportion of women and children doing farm work, especially if one considers the whole of the last century.

II

In 1905, the English economist, J. S. Nicholson, wrote: 'One of the most remarkable results obtained from the application of

¹ Bjerke, *op. cit.*, p. 126.

² Bellerby, *op. cit.*, p. 239. Based on comparisons of weekly earnings for hired workers in agriculture and weekly earnings of industrial workers. Bellerby also estimates the labour earnings of farm operators and members of their families and the long-run picture is similar.

³ Bellerby, *ibid.*, p. 241. See also p. 214. Estimate based on comparisons of earnings of wage workers.

⁴ Bellerby, *ibid.*, p. 243.

inductive and historical methods to economics is that wages in agriculture are generally lower than wages in other industries that involve similar hardships and require similar skill. So universal is this relative depression of agricultural wages, that in the matter of economic laws or tendencies it ought to take first place. The tendency to depressed wages in agriculture is certainly much less liable to be counteracted than the celebrated tendency to diminishing returns in agricultural production.¹ The work done by Thomson, Bellerby, and others reveals that the real returns to the labour of farm operators and members of their families, in most cases, are below the returns to workers in other sectors of the developed countries.

In most developed countries and in most circumstances, economic analysis would indicate that such a discrepancy would arise. As real incomes increase, given the relatively high birth-rates in rural areas, the low income elasticity of demand, and the significant technological advances in agriculture, there has been a net migration from farm to urban areas and a relative, and usually absolute, decline in labour employment in agriculture. Since there must be some income differential to induce the migration, farm labour earnings will be below non-farm for comparable labour.

But when we say that we know that real returns to comparable labour will be less in agriculture, if there is a significant migration away from farm areas, we are not saying as much as we would like to say or as we ought to be able to say. We need more specific answers to somewhat more specialized questions: (1) How large is the real-income differential between workers of comparable ages, sex, capacities, skills, and education in agriculture and in the rest of the economy? (2) Under conditions of full employment, what is the relationship between migration rates and this differential? (3) Can public policies be devised that will reduce the differential associated with any given rate of migration?

In the developed countries, most agricultural policies have attempted to do something about product prices, generally, to raise them above levels that would otherwise prevail. On the whole, I feel that this has been a mistaken emphasis if the objective of farm policies has been to reduce the differential between farm and non-farm labour incomes. The major effects seem to have been to increase farm output, especially through inducing greater investment in machinery and through increased purchases of non-farm production items such as fertilizer, and to increase land prices. The long-run in-

¹ J. S. Nicholson, *The Relations of Rents, Wages, and Profits in Agriculture, and their Bearing on Rural Depopulation*, London, 1906, pp. 114-15.

crease in labour incomes, due to such programmes, has certainly been quite small, given the relative ease with which labour can be induced to remain in agriculture, since a positive decision is required if labour is to leave.

Certainly, if the hundreds of millions of pounds or thousands of millions of dollars that have been spent in the United Kingdom or the United States had been spent to expedite the transfer of labour from agriculture to non-agricultural occupations, farm labour returns could have been increased quite substantially. Furthermore, the prices of some farm products produced by less well-developed countries and exported in large quantities would now be significantly higher. It is one of the anomalies of farm policies in the developed countries that, while there is a real concern about the level of farm labour incomes, it has not been politically expedient to attack the problem directly by aiding the transfer of labour from agricultural to non-agricultural occupations.¹

III

The fact that average farm incomes vary significantly from one area to another within the same economy has long been noted. With the possible exception of Australia and New Zealand and some of the small countries (Denmark, Belgium, and the Netherlands), every industrial country has such differentials. In the United States, low agricultural incomes are concentrated mainly in the south and south-east, but smaller areas may be found in other parts of the nation. Some slow progress is being made through high rates of migration, but the time required for the adjustment seems inordinately long.

Space does not permit a detailed presentation of the available factual material.² But it is important to note that even the most highly developed economies, with their rapid and relatively cheap

¹ I would be less than completely frank if I did not note that there are several prominent agricultural economists in the United States who disagree with the position expressed in the last two paragraphs. It is held in some quarters that continued withdrawal of labour from agriculture would not have a significant effect on farm output and thus on farm prices and farm incomes. However, the incomes of farm labour can increase significantly without any change in relative farm prices if the marginal physical output per worker increases over time. This seems to be what has occurred in the United States during most of the last half-century. For example, compared to 1910-14, wage rates of hired farm workers have increased from an index of 100 to 567, while prices received by farmers have increased to 264 and prices paid by farmers for production items have increased in about the same proportion as prices received. This implies that the marginal physical product of hired labour has at least doubled since 1910-14, and most of the increase has occurred since 1929.

² See T. W. Schultz, *The Economic Organization of Agriculture*, New York, 1953, especially chapters ix, x, and xviii.

methods of transportation and national communication systems (press, radio, telephone), have difficulties in maintaining even development of all geographic areas. This is true of the socialist or communist economies to at least the same degree as it is of the private-enterprise economies.

IV

Agriculture has played a very important part in the economic growth of each of the major developed countries. The history of agriculture in the developed countries is of great significance to the less fully developed countries of the world. Too many people, including not a few economists, accept the apparent inverse relationship between national *per caput* income and the percentage of the nation's labour force engaged in agriculture as proof that the way to increase *per caput* income is to industrialize as rapidly as possible by concentrating investment funds in the urban sector.

Such a conclusion is erroneous on several grounds. First, the high proportion of the labour force engaged in agriculture is, in itself, a consequence of a low level of productivity in the economy as a whole—in agriculture as well as in the rest of the economy. If food output per farm worker is low, the proportion of the total population engaged in agriculture must, necessarily, be large. In these circumstances, an increase in the non-farm population at a rapid rate must result in either a reduction in an already low level of food intake or the use of foreign exchange (through reduced food exports or increased food imports) to supplement the lagging food supply. In either case, industrialization efforts will be hindered by a shortage of investment funds, the inability to obtain the necessary imported capital equipment, and by inflationary disturbances.

Second, the experience of the more highly developed countries is quite consistent with the view that the rates of return on many types of investments in agriculture are fully as high as in the industrial sectors. This is certainly true of investments in improved seeds, disease control and, probably, fertilizer. It probably is also true of investments in improved farm implements, and this does not mean only tractors and large harvesting equipment but also such relatively mundane items as hoes, spades, ploughs and cultivators. Some investments will be primarily labour-saving while others may have primarily an output effect. But both are important over a period of time. Even labour-saving investments in agriculture, which release labour at a more rapid rate than industrial employment increases and are used for building schools, roads, sanitation facilities and

other labour-intensive special improvements, can be of great benefit.

Third, the experience of the more fully developed areas shows that, as the real income of the farm population increases, a considerable demand is created for services from the non-farm sector. This, in itself, results in a reduction of the proportion of the population engaged in agriculture. Such a development indicates that the decline in relative and absolute employment in agriculture can occur because of high incomes in agriculture and the increasing specialization of functions that both makes possible and results from rising productivity.

What has been said above may be put somewhat differently. There is no technological or economic reason why average incomes and productivity cannot be as high, or almost as high, in agriculture as in any other type of economic activity. Furthermore, while it may be possible to have a backward agriculture and a modern industry existing side by side, the productivity of the human agent will be enhanced and, thus, the long-run growth potential of the economy, by placing sufficient emphasis upon agricultural development to permit more adequate education in rural areas and better health and nutrition as well as familiarity with modern methods of production and commercial activity. In newly developing economies, much of the non-farm labour force will be drawn from rural areas. Their productivity in industrial employment will certainly be related to the capacities and experiences acquired in the farm setting.

V

There are other issues that could have been developed within the framework of my title—the impact of business cycles on agriculture, the international implications of the farm policies of the more highly developed countries—but I am prevented by lack of time.

In summary, the shifting fortunes of farm people in the developed countries have been a long-run process of improvement, limited in large part by the *per caput* growth of real income of the particular national economy. There is evidence that, at any point of time, the real returns to agricultural labour are less than for non-agricultural labour, but there is no indication that the difference has widened over time, and in several countries it has apparently narrowed.

III. THE EXPERIENCE OF LESS FULLY DEVELOPED COUNTRIES

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THE term 'less developed areas' is frequently used in the United Nations World Economic Survey, 1955. In this publication, the term appears to cover Latin America, Africa excluding South Africa, and Asia excluding Japan. The coverage is indicated in the context of private-enterprise economies and does not, therefore, take note of the centrally planned economies. In any general review China will have to be included among the less developed countries. Detailed information relating to China is, however, scanty and in this paper I have given little attention to that country or to any of the other centrally planned economies.

Statistical and other data are not readily available for the less developed regions as such. They are usually available for entire regions such as Latin America, Africa and Asia, or the Middle East and the E.C.A.F.E.¹ regions in Asia. South Africa and Japan have properly to be excluded from these regions. However, their inclusion does not greatly affect the broad statistical picture and the data for Africa and for the E.C.A.F.E. region are presented here without exclusion of the data for South Africa and Japan.

The under-developed areas of the world comprise countries with an immense variety of physical and human conditions; and it is not possible to generalize about changes in their agricultures. Also, detailed economic information relating to the agriculturists in these regions, to make possible a connected picture of their changing fortunes, is not available. Therefore I attempt to frame this picture by examining (i) the regional data for production, trade, prices, and terms of trade, (ii) the content and operation of national policies, and (iii) the data regarding relative incomes of agriculturists for a number of individual countries.

I

Asia (excluding the territory included in the U.S.S.R.), Africa, and Latin America together contain roughly 70 per cent. of the population of the world, and in recent years the growth of population in these regions has been rapid. For the period 1951-5 the world rate

¹ United Nations Economic Commission for Asia and the Far East.

of population growth was put at 1.6; the corresponding rate for Africa was 2.0, for Latin America 2.5 to 2.6, and barring one region, viz. South Central Asia, the rate was higher than the world average for all other regions of Asia.¹ More than three-fifths of the people in the world live on farms. In all the more fully developed countries the proportion of the population supported by agriculture is less than 50 per cent.; it is more than 60 per cent. in Asia and Africa and more than 50 per cent. in Latin America. As a result, more than 80 per cent. of the world population supported by agriculture lives in these regions. Viewed as a human problem, the problem of agriculture is essentially that of the less fully developed countries.

Agricultural production in the world has been increasing side by side with the growth of population. Increase in agricultural production in the post-war period had to make good the ground lost during years of war and also to keep pace with, and outpace if possible, the growth of population. It was only in 1954-5 that the world level of *per caput* agricultural production attained the average level of the years 1934-8. Among the less fully developed countries production, particularly in Asia, suffered greatly during the war, and in some of them conditions favourable for increased production were not re-established for some years. As a result, in the E.C.A.F.E. region as a whole, *per caput* agricultural production in 1956 was still a little lower than in 1934-8. Latin America has shown a very high rate of growth of regional population in the post-war period and in spite of continued expansion in agricultural production its *per caput* level remains below that of 1934-8. In all the regions, the rate of growth of industrial production has been relatively much larger than that of agricultural production.

Rates of growth of total agricultural production and, in particular, the relative rates for food and non-food crops varied greatly from region to region in the post-war period. Food crops have always held a dominant position in all the less well-developed areas. The rates of growth of food crops have therefore moved parallel to those of total agricultural production. In the E.C.A.F.E. region where the net advance in both food and non-food crops has not been large, the rate of growth has been slightly larger in non-food than in food crops; in Latin America, on the other hand, the increase in production has been mainly in food crops, the growth in non-food crops being comparatively small. In these two regions *per caput* food production has not yet reached the pre-war average. In the Near East, the growth in food crops has been larger than in non-food, though

¹ U.N. *Demographic Year Book 1956*, table A, p. 2.

the disparity in rates of growth of the two groups has not been so marked in this region as in Latin America. In Africa, there has been considerable increase in the production of food crops, roughly of the same order as in the Near East and Latin America. However, the rate of this increase has been much smaller than in non-food crops which have made remarkably large strides in this region during the post-war period.

International trade in agricultural products declined considerably during the years of war which also brought about changes in the origin and destination of exports and imports. The most remarkable differences in the situation in 1946 as compared with that in 1934-8 were (i) the very large increase in the exports of food and feeding stuffs from North America, and (ii) the great decline in total agricultural exports together with almost complete cessation of food exports from the E.C.A.F.E. region. The decline in the volume of the international trade in agricultural products during the war was made good by 1954 and there has been some increase since that year. The growth still lags substantially behind the growth of trade in non-agricultural products.

The most important shift that has taken place in recent years in the fortunes of the agriculturist is the recovery of relative prices of agricultural products from the very low level of the thirties. All evidence indicates that as a result of this improvement in relative prices farming communities were substantially better off in the years immediately after the war than in the specially depressed years before it.

Changes in the relative position of the agriculturist may be calculated in a number of ways. One is to relate movements of farm prices of agricultural products to those of general wholesale prices. Such a comparison points to a general improvement in the post-war period. However, the peak period varies in individual countries from the years immediately after the war to the period of the Korean boom. Everywhere the farmer lost ground after the attainment of the peak in 1954 and subsequent years, and his relative position in some countries became as unfavourable as before the war. Data are available for comparing the prices received by farmers with those paid by them in a number of highly developed countries. Examination of these reveals the same trends as in the relation of farm prices to wholesale prices.

Relations between price series cannot reflect differences brought about by changes in output or unit costs. Direct data relating to farmers' incomes where available are, therefore, the best indicators

of the fortunes of agriculturists. It would appear from such data as are available in a few highly developed countries that, in these countries, after 1954, growth of output counteracted to some extent the effects of the continued deterioration in the ratio of prices received by the farmer.

Statistical data for most measurements of relative income and consumption levels are not ordinarily available in the less well-developed countries. However, such direct or indirect evidence as is available points to an improvement in the condition of farmers in the years immediately after the war. For example, the All India Rural Credit Survey found two indicators of the relative improvement in the position of cultivators during the late forties. The first was the low level of indebtedness in all villages surveyed in 1951-2 and the comparatively small proportion of debt of many years' standing; the second was the significant volume of net purchases of land made by cultivators from non-cultivators during the year of the survey, i.e. 1951-2.

In the absence of more direct data, one of the criteria that may be used for judging the relative economic condition of agriculturists of certain regions or of growers of certain products is the terms of trade for agricultural products in international trade. This criterion is specially important for those countries in which the fortunes of the agriculturists depend to a large extent on the production and export of a small number of agricultural products. It is agreed that the purchasing power of agricultural products on international markets declined steadily and, during the inter-war period, was on a lower average level than at any time during the previous half-century. The gain in the post-war period was substantial but does not appear to have been maintained or stabilized. What is more important from our point of view is that the changing gains and losses from period to period are spread very unevenly over individual agricultural commodities and may thus bring about varying changes in the fortunes of the agriculturists of different countries. Some commodities bore the brunt of the fall in prices during the depression of the thirties; movements in the post-war period have also been uneven. A recent article on the prospects of Latin American trade divides the main agricultural exports from Latin America into three groups.¹ The first consists of coffee, cocoa, bananas, and wool. These are products for which there is an expanding world demand and for which prices, though not stable, may be expected to be maintained at favourable levels. The second group consists of sugar, wheat,

¹ F.A.O. *Monthly Bulletin*, Mar. 1958.

tobacco, and cotton. International trade in these is not expanding and Latin America's increased share in the trade is attributed to special factors such as the non-recovery of older exporters. The current terms of trade for the products of this group are much less favourable than are those for the first, and the prospects are not very hopeful. Maize and beef form a third group of commodities. World trade in coarse grains appears to be contracting rather than expanding and the prospects of the trade in meat and other livestock products are held to be uncertain, owing chiefly to the importance of domestic supply in most importing countries. Reference may also be made to a statistical examination of changes in the terms of trade and their effects on national income and trade balance in E.C.A.F.E. countries¹ whose results are relevant in this context. The chief of these are that during the period 1949 to 1956, countries exporting mainly primary products enjoyed the larger gains or sustained the larger losses through changes in terms of trade; the chief sources of gain were rubber and certain mineral products on the export side and textiles on the import side. The trade gains for the region rose to a peak in 1951, fell to one-fourth in 1953, and again more than doubled in 1955. Prices of primary exports and gains from trade fluctuated violently; the fluctuations were primarily created by changes in demand for exported products and there was no control in the hands of producer-exporters. These evaluations of future and past situations will make clear why in the agricultural programmes of the less fully developed countries emphasis is placed, wherever possible, on diversification of agricultural production or on selective expansion.

It is clear that in spite of diversity of conditions certain important features of the situation are common to a large number of the less well developed countries. These are a somewhat slow expansion of agricultural production and of trade in agricultural products, a lowered level of exportable surplus of foodgrains and greater dependence on imports of foodgrains, some correction of the price disadvantage of the thirties accompanied by great unevenness in the distribution of the gains, and continued instability in relation to the volume and value of world trade in agricultural products.

II

Acceptance of the need for an active economic national policy on the part of governments is an important phenomenon in the post-war world situation. Governments of most less developed countries

¹ *Economic Bulletin for Asia and the Far East*, May 1957.

have become concerned with economic development in the post-war period and are adopting active measures towards bringing it about. In view of the dominance of agriculture in these economies, programmes of development naturally emphasize growth of industry and production of energy. However, agriculture cannot escape attention in these plans and policies. The rapid growth of population in these countries renders increased supplies of food urgent. In a number of these countries the first steps to improve the economic condition of the mass of the people are apt to be accompanied by an increase in the *per caput* demand for food. And recent experience indicates the desirability of relative self-sufficiency in food supplies. Most of the under-developed countries have thus to be concerned about increased food production internally. Secondly, and even more importantly, the under-developed countries belong mostly to the class of 'primary exporting countries' and depend for their foreign exchange resources chiefly on exports of agricultural produce. As the industrial development plans of all these countries depend essentially on imports of capital goods, the ability to earn exchange through exports of agricultural produce is vital and must lead them to take steps to increase and diversify agricultural production. In the long run, successful and sustained industrial development will itself need a wider agricultural base. The fullest attention has thus to be paid to agriculture in the development plans of the under-developed countries. The importance to be attached to agricultural development may be reduced to some extent only in those countries which possess an important alternative exchange-earning asset such as oil.

Increasing the total agricultural base, diversifying agricultural production, and making the farmer's activities more profitable have been agreed objectives in most national programmes. The agricultural base may be increased by extension of area or by increasing intensity of exploitation. There are still considerable unexploited areas in a number of the less developed countries. This is so in many countries in Latin America and Africa, and in countries like Malaya and the Philippines in Asia. In countries where such extension of area is possible, provision of food for the growing population does not present great difficulties. In all the older, more settled areas, the problem is made intractable because the pressure of population keeps the individual unit of cultivation small, and unless non-agricultural economic activity grows at a specially rapid pace further growth of population is apt to worsen the situation.

In recent years, among the less developed regions it is only in Latin America that the proportion of the total active population

engaged in agriculture has declined significantly, in this case from 59 per cent. in 1940 to 49 per cent. in 1955. In this region also, the gross product per worker in agriculture rose by 18 per cent. between 1945-7 and 1953-5.¹ These figures represent considerable progress within a large region. Similar data are not available for all regions. As a contrast, however, the level of production per head of the agricultural population in the E.C.A.F.E. region is very low. But the really serious aspect of the situation is the stagnation in agricultural yields over the decades. The proportion of those dependent on agriculture in those countries is among the highest in the world and a trend towards continuous industrialization cannot be started and maintained if, as happens in some of them, the labour of one man fully at work on a farm will barely suffice to feed two persons.²

In the older countries extension of area usually involves costly schemes of irrigation, reclamation, &c. Increase in per unit productivity may not require large outlays but can be brought about only through detailed and well-organized schemes of research, education, and extension. One of the more rapid ways of increasing productivity of labour, mechanization, is also not practicable in countries with small-holdings and growing numbers supported by agriculture. Apart from the direct attempts at increasing area and productivity, programmes of agricultural development in the less fully developed areas have other highly important aspects. These are reform of the rural socio-economic structure and reorganization of individual holdings included under the omnibus term land reform; making rural credit more plentiful and conveying it through institutional channels; making the marketing structure more efficient; and programmes of subsidies and control, support and stabilization of prices.

Programmes of research and education are of fundamental importance in the long run. In the context of the actual fortunes of the agriculturist they assume importance when they come to affect his costs or his income. This is also true of any programme for rationalizing layout or other rearrangements of the holding. There is, however, one aspect of land reform which may immediately affect the fortunes of agriculturists. This is where, through the abolition of a superior holder or the reduction of levels of legal rent, &c., the outgoings of the agriculturists are reduced. It appears that the largest changes in the fortunes of agriculturists in this manner have been brought about in the centrally planned economies. China is the most

¹ U.N. *Economic Survey of Latin America*, 1956, p. 106.

² U.N. *Economic Bulletin for Asia and the Far East*, May 1956. Article on Population and Food Supplies.

important recent example. However, to a lesser extent the abolition of intermediaries and reductions of rent have taken place in countries such as Burma, India, Pakistan, the Philippines, Egypt, Turkey, Guatemala, Bolivia, and Puerto Rico. The difficulty of assessing the actual change brought about by these programmes lies in judging the actual effectiveness of legislation. Careful surveys have revealed large failures in this respect in particular areas.

Programmes for credit and marketing could improve the economic position of the agriculturist within a short time. They can lead to reduction of costs such as interest and commission, borne currently by the agriculturist, and can give rise to increasing receipts through greater and more effective outlay. The results of credit programmes are comparatively readily recorded. These programmes have been elaborated in only a small number of the less developed countries and in 1955 the F.A.O. judged only that 'they have slightly augmented the flow of institutional credit to agriculture'.¹ The latest data indicate no great advance. Among the under-developed countries the amounts of institutional agricultural credit advanced in recent years appear significant chiefly in Turkey and Egypt in the Near East, Puerto Rico, Colombia, and Argentina in Latin America, and the Philippines, Ceylon, India, and Indonesia in the E.C.A.F.E. region.²

The most considerable effect on the fortunes of the agriculturist is likely to be produced by measures of direct subsidies or by price support and stabilization measures. Subsidies may be granted as part of a long-term development programme for purposes such as the improvement of land or for irrigation. In terms of current operations they are used chiefly for encouraging the adoption of improved products or methods such as fertilizer usage, improved planting materials, or tractor ploughing. Though useful in the implementation of certain plans these are not significant in the total operations of a farmer.

Price policy could affect materially the agriculturist's entire economic situation. The simplest objective of such policies would be the elimination of seasonal fluctuations. For example, reserve stocks of grain could serve not only as insurance against crop failure but could also bring down very substantially the annual seasonal variation in prices.³ Usually, however, a longer period is in view with the aim

¹ F.A.O. *The State of Food and Agriculture*, 1955, p. 40.

² *Ibid.*, 1957, Annex, table 16.

³ For recent experience in S. Korea supporting this view, see U.N. 'Economic Development and Planning in Asia and the Far East', *Economic Bulletin for Asia and the Far East*, p. 6.

of obtaining a fair average price over the years. Where the commodity whose price is controlled is also an important export commodity the operation may amount to an insulation of the domestic market, with internal prices being in some years above and in others below the international price level. Price stabilization or support policies are fairly widespread in the less developed countries. Generally, the prices of only a small number of agricultural products, particularly those entering into international trade, are thus controlled. The governments of all the major Latin American countries, such as Argentina, Chile, Uruguay, Brazil, and Colombia, control prices. In tropical Africa, the outstanding feature is the operation of the Marketing Boards. For many years these Boards kept the domestic price of cocoa, for example, at a lower level than the international price but in the years of depressed prices after 1954 were sometimes able to maintain it above the international level. Among the Middle East countries Egypt and Turkey have adopted price support policies. The Egyptian government controlled both acreages and prices of wheat and cotton and used these for stabilizing both farmers' incomes and export earnings. In Turkey, the government provides price support for a much larger number of agricultural commodities than in Egypt. The government sets prices at which it is prepared to buy any quantity of these agricultural products—particularly grains. This, together with government organization for storing and issuing grains, has brought about a great increase in grain production in Turkey since 1950. In the under-developed countries of the E.C.A.F.E. region, many of which are rice economies, price stabilization or support policies have been established for rice, notably in the Philippines, Ceylon, Thailand, and Burma. In Burma, in particular, the elaborate price and marketing policy has been directed not only towards stabilizing farmers' incomes but also towards obtaining resources for the development of the economy. Where state marketing monopolies have operated long enough to build up their own reserves the stabilization operations have been fairly successful and have been maintained even in the face of falling international prices.

The operations of these price policies must be considered as an extremely important new factor in the economy of agriculturists. In the under-developed countries these policies cannot increase the share of the agriculturists in the total national product as the agriculturists here form the majority group. But, through their incentive effects, they may increase total production and may increase the average real level of incomes by eliminating uncertainty and fluctua-

tions. However, in view of the large variety of types of support policies and the variations in their administrative efficiency, it is not possible to make any general statement as to their effects.

It has been recognized generally that action by individual countries could not, by itself, prove adequate for stabilizing the level of agricultural prices, and efforts at international action towards this end have been marked since the depression of the thirties. The considerable increase of inter-government transactions during the war years and after, and fears of a depression in the immediate post-war period, led to attempts at international commodity agreements on a much wider scale than before. The chief new feature of these was the attempt to associate both producers and consumers in one agreement. International organizations like the F.A.O. have actively backed the formation of international commodity agreements. It remains true, however, that the International Wheat Agreement and the International Sugar Agreement are the only two which today affect agricultural producers in large areas in the less fully developed countries.

In the absence of international agreements primary exporting countries have attempted to secure their position by entering into bilateral agreements with the chief importing countries of their products. Burma has been one of the most active in seeking these. In regional terms the Latin American countries have tended to look to guaranteed purchases by the U.S.A. The vital importance to less developed economies of secured export markets was recently emphasized by the agreements on sales of cotton by Egypt and Syria to the U.S.S.R. The possibility of mutual help among the less developed countries has been indicated by the Rubber-Rice Agreement between Ceylon and China.

It is difficult to judge the effects of State policy, especially in the short run. Policy which brings about better distribution such as land reform and co-operative organization of marketing and credit may prove the starting-point, and may indeed be a necessary pre-condition of greater and more diversified production. The immediate betterment of the fortunes of the agriculturists through such policies is not, however, easily discerned. The effects of price support and stabilization policies are even more difficult to assess. For example, for many years Burma has followed a policy of a low stabilized rice price for the farmers and of canalizing the gains of rice exports into development. India, on the other hand, has had no well-defined policy in this respect and has almost let things drift. Only a detailed, many-sided study of the situation in the two countries could lead to

a firm judgement regarding the relative merits and propriety of the two different approaches.

In the post-war period social welfare policies have been responsible for improving the conditions of the people in a number of countries. However, significant programmes of social security have not been undertaken in most of the less developed countries, and in countries such as India and Pakistan expenditure even on education for the rural population gets surprisingly small allocations.

III

In recent years use has been made of national income data for obtaining some idea of the relative condition of agriculturists. Comparison of *per caput* incomes in agriculture, forestry, and fisheries with *per caput* incomes in all other occupations taken together shows that in all the less developed countries the agriculturist is relatively inadequately rewarded. As a rule, in these countries, the *per caput* income in agriculture is less than 50 per cent. of that in all other occupations and the percentage may be as low as 30. The percentage depends on a variety of economic considerations and generalization is not possible. In the present context, interest attaches to whether the percentage is increasing or not. In absolute terms, the income of the agriculturist ordinarily increases with an increase in total national income. In view of the existing inadequacy of the earnings of agriculturists, it is important that the agriculturists' income should increase faster than the national income. The data for judging this are scanty but those available indicate large variations. For example, it appears that in Turkey the *per caput* income in agriculture, forestry and fisheries as a percentage of the *per caput* income in all other occupations was 30 in 1938, 51 in 1948, and 60 in 1952; in the Philippines, it varied between 29 per cent. and 34 per cent. between 1948 and 1952 without showing a definite trend.¹ It is obviously dangerous to generalize on the basis of the data for a few years, especially in the case of incomes in agriculture. It would appear that in the years between 1946 and 1952 the trend in regions like Latin America, the Middle East, and Africa was for incomes in agriculture to rise at a rate faster than the national income. The data after 1952 do not present a consistent picture. Fully reliable information regarding the occupational distribution of the population is not available for all countries, and where available it pertains only to particular years. It is necessary, therefore, to confine attention to movements of total

¹ F.A.O. *Agriculture in the World Economy*, 1955, p. 54.

income in agriculture instead of attempting to estimate *per caput* figures for studying trends after 1950.

Examination was made of the data for the six years 1950 to 1955 for some of the larger among the less developed countries in different regions in which the share of agriculture is larger than 25 per cent. of the total domestic product. These were Brazil, Burma, Colombia, Egypt, India, Pakistan, the Philippines, Thailand, and Turkey. The examination revealed that in Brazil and the Philippines, the share of agriculture (valued at current factor cost) rose continuously from 1950 to 1955 at a rate faster than the total domestic product and that consequently the share of agriculture in the total was larger after 1952 than in earlier years. In all the other seven countries, the share of agriculture in the years after 1952 was less than in the years before 1952. These data also indicate very large fluctuations in the value of the product of agriculture from year to year in some countries. In Burma and Colombia, in addition to Brazil and the Philippines, there was a steady movement upwards in the value of both agricultural and total products between 1950 and 1955. In Turkey also, the movement was continuously upward except for a drop in the value of agricultural product in 1954. On the other hand, in Egypt, India, Pakistan, and Thailand, there were variations in both directions from year to year and some of these variations were large. In interpreting these data, it is necessary to remember that differences in the pattern of production and in policies of price support and so on would lead to differences in the situation of agriculturists from country to country.

There are also other limitations of agricultural production data in this context. For example, because of stratification within the agricultural community, the benefits and disadvantages might be very unevenly distributed among its members. Thus it has been reported that both in north and tropical Africa agricultural activity which has proved specially profitable during the last decade has been concentrated in the hands of small groups of European settlers. Overall indicators may mislead in relation to the fortunes of the bulk of farmers in such instances. Further, in a large number of underdeveloped economies the share of landlords, money-lenders, and traders in the total product of agriculture may be substantial and this might even become proportionately larger in periods of instability. Surveys in such countries have revealed that primary producers fail to profit from temporarily favourable changes and that the effects of an occasional very bad year may be felt by them for a number of years afterwards. This makes it necessary to exercise caution in

estimating effects of favourable changes which have not been stabilized or trends which are not persistent.

Recent studies have shown that the main factors responsible for low relative incomes in agriculture are (1) economic instability of agriculture, (2) immobility outwards associated with mobility inwards. Economic instability stems from both instability of yields and of agricultural producers' prices. Increases in the inelasticity of the demand for food products, enhanced possibilities of displacement of agricultural raw materials by synthetics, &c., and the emergence of surpluses have intensified demand instability in the post-war period. All national and international attempts to make markets and prices for the agriculturist more stable have achieved little real success. Rapid growth in population continually adds large numbers to the largest occupational group, viz. agriculture, and the limited number of openings in other occupations reinforces the other reasons for outward immobility. In the older, poorer, and more populous of the less fully developed countries all the factors operate in a cumulative manner. Unless, in some way or other, the vicious circle is broken there is little prospect of the beginning of an upward trend, relative or absolute, in the fortunes of the agriculturist.

KARL BRANDT, *Stanford University, California, U.S.A.*

We heard yesterday from one of the leading statesmen of the world and from our Founder-President thoughts on the issues of agriculture which set our sights high. All the inaugural addresses have centred around the moral obligation towards the vast number of our fellow men who live on farms, many of whom still live and toil in utmost poverty. To diminish and ultimately conquer poverty everywhere has always been the great challenge of the humanistic discipline of economics.

This morning's three papers weighed and interpreted the historical evidence and experience in the agricultural sphere and ranged in a broad sweep over innumerable problems of daunting perplexity. I find myself in agreement with the three speakers in their basic theses though I have some reservations in detail, and I agree almost entirely with Professor Johnson. Some of my reservations concern methods used in making estimates, while others concern interpretations.

Professor Lewis defined economic development as a continual process of the transfer of human resources to activities other than food and fibre production, an analysis which Professor Johnson forcefully underlined and to which I subscribe without reservation.

This iron-clad law of economic development rests on two facts: first, the relative income inelasticity of the demand for food compared with the demand for other goods and services; second, the opportunity to increase the productivity of labour in all agricultural pursuits as much as in non-agricultural activities. This second fact has been proved conclusively only in recent decades. It could not be recognized by the classical economists to its full extent because the knowledge of plant growth and of man's control of growth factors was then still very defective. From this law of economic development, involving the shrinking employment capacity of agriculture in a dynamic society, results one of the great paradoxes of agricultural policy, namely that the economic leverage for agricultural development must largely be exerted by creating general economic conditions in which agriculture can flourish. Only in an expanding economy do agricultural policy problems become manageable.

But to see the shrinkage of the agricultural sector of a developing economy in its true nature we must appreciate that in an under-developed economy agriculture is not merely concerned with food production, but represents all industries combined, and yields food, fibres, clothing, shelter, tools, and even some medicines and entertainment. The division of labour increases efficiency and with it productivity per man hour in all the gradually specialized activities. But with separation of crafts and skills it seems absurd to assume that the highly developed economy of food production is ultimately confined to the farm. In reality it is then dispersed among farms, mines, factories, laboratories, and scores of farm service agencies.

This is essential, because it is possible to maintain to a large extent the form of community settlement (village or small rural town) and yet for labour-orientated industrialization to proceed up to top-level industries. To establish this form of development without destroying the traditional settlement and its social fabric is one of the outstanding features of Mr. Nehru's economic policy which has shining fore-runners in Switzerland, southern Germany (Württemberg), France, Holland, and Belgium. Such a course of decentralized industrialization requires powerful policy support if it is to succeed.

Professor Johnson presents weighty evidence that in the long run farmers have shared the rise in real incomes that pervaded the expanding economy because of a strong net migration from farm to urban areas. With considerable scepticism about the accuracy of the basic data used I believe nevertheless that Professor Johnson's appraisal is essentially right. He also states that the income-differ-

ential between farm and non-farm employment is the necessary incentive to induce the vital transfer of labour. He emphasizes the necessity to overcome the reluctance of farmers to make the bitter decision to move with their families to other occupations. I fully subscribe to this sharp and hard analysis though fully aware that it creates extraordinary social and political problems and requires the patience, understanding, and wisdom of policy makers and, even more, of administrators. If Professor Johnson is right, as I believe he is, the crucial concomitant is that so long as the economy expands the rate of improvement of income for farmers will be higher than that for other activities despite the disparity with non-agricultural income at any time.

Professor Lewis's paper with its mellow wisdom strikes me as being slightly aloof, non-committal in its conclusions as to the future, and pessimistic in its underlying assumptions. His review seems to imply that there is almost no, or at least extremely little, margin for determined economic policies to alter economic trends and little real choice in foreign policies. In fact Professor Lewis's paper has omitted almost entirely the impact of major changes of such policies in the past on the changing fortunes of agriculture in general and on the raw material exporting countries in particular.

I show no disloyalty to my country in pointing out that it is inconsistent with a policy of peaceful competition in a world of maximum exchange of goods and services for universal benefit, if highly advanced industrial countries subsidize the unloading of by-products of their agricultural policies on other countries. While the impact abroad is not deliberately planned, but is merely the side effect of domestic policies and their insufficient co-ordination with constructive foreign policies, this impact is very real and causes international political tensions. However, it serves no purpose if we as agricultural economists simply accept it as one of the political facts of life quite apart from the moral issues involved. I prefer to point out that it is the duty of leading powers in the world either to abstain from such policies or to compensate their negative effects abroad by substantial positive economic action abroad—for instance by energetic capital transfer for the economic development of under-developed areas. I interpret a substantial part of American legislation on foreign economic policy of recent years as the application of such philosophy and I expect substantially more of it in the near future on behalf of peaceful foreign relations.

The question then arises: for what sort of investment should such capital transfer be used? I believe that the farm people in under-

developed countries have a just claim to have a part of this investment channelled into industries which supply agriculture with means of production, thereby helping to increase their own production and to lessen the burden of this adjustment.

Outstanding man-made resources which have been created in our time are:

1. Nitrogen factories which can convert coal gas or hydro-electric energy into food energy and can be built in every country that does not want to import nitrogen. Six or eight tons of coal or their energy equivalent can produce one ton of nitrogen which, in turn, can yield roughly twenty tons of grain equivalent. Therefore, plans for industrialization in large under-developed countries with food shortage should give the highest priority to this form of capital investment. It will help to close the foreign exchange deficit—even if the fuel has to be imported. The marginal productivity of capital so invested is extremely high and may well earn over 20 per cent. interest.

2. Irrigation with revolutionary new techniques which require far less capital (no land levelling), labour, and water, but some fuel or electric power together with small pumps and aluminium pipes. Investment in such industries may make a Garden of Eden out of cactus desert (as it does at present in parts of Mexico) wherever water is or can be made accessible. Again, industries supplying the needs of this sort of intensification should have priority in under-developed countries. Such industries will soon increase the variety of their products and turn out other goods after supplying the vast farm market. Fertilizer, water, pesticides, and improved seeds have an immense advantage, as a means of increasing the productivity of labour in agriculture, in that they do not presuppose a difficult change of the structure of the industry.

As to the supposed 'false climate' of industrialization by expanding agricultural exports of which Professor Lewis spoke, my comment is that this may be so in one area but need not be so in others. Expanding agricultural exports requires steady transfer of labour out of agriculture and the expansion of the 'external economies' such as transport facilities, storage, &c. Quite a number of countries with excellent natural foundations for competitive agricultural exports have recently chosen—mostly for prestige or political reasons—to withdraw from the world market in various degrees. Instead of striving for balanced economic development with gradual industrialization, they have chosen to force industrialization with a whole range of heavy and light industries. In many instances attempts to

telescope economic growth into four or five years has been detrimental to their people and a violation of economic experience and common sense. A moderate course of maintaining their existing comparative agricultural export advantage with simultaneous gradual industrialization step by step would have avoided the bankruptcy of many of the new industries and the waste of vast amounts of capital as well as disastrous foreign exchange deficit. In many a country which forced industrialization agricultural resources without equal have been seriously decapitalized and depleted while white elephants of extravagant new industrial plants stand idle or eat up national revenues. This warning experience militates not against industrialization but against the forced pace and the one-sidedness of letting existing reliable agricultural resources rot away, as, for example, in Argentina.

Professor Lewis refers to the replacement of natural farm products by synthetics and claims that in some cases this monopolistic competition has led to less erratic prices. Based on intensive commodity studies I may say I know of no example where farm products have lost their market to synthetics, either in fibres or in fats and oils. Such assumptions are also unwarranted for silk, wool, and cotton.

Professor Gadgil agrees with Professor Johnson's thesis that the income of farmers has increased in the past with the growth of total national income; he uses data of changes in indebtedness as a measuring rod for the changing farm income situation, an indirect but reliable tool. He then tackles one of the most tricky and controversial subjects without advocating specific policies: price stabilization. I can easily agree with his view that to reduce violent seasonal fluctuations of farm commodity prices is a highly desirable undertaking in all countries. Such a policy, to avoid seasonal gluts, can be executed by credit to farmers, by exports and imports, by stocks of commodities, and by various other devices. But policies to turn the terms of trade deliberately against the farmer are something entirely different and extremely dubious. They are only camouflaged by the euphonious name of price stabilization. Professor Gadgil refers to policies of South American countries and to policies of the Marketing Boards in several African territories or states. These are of a type which plugs up the very source from which all agricultural development must be fed, namely capital formation. Most unfortunately it is still not well enough known how much capital is needed per worker in agriculture to make production efficient and to yield an equitable income. Far more is needed than is commonly assumed and much of it requires a high rate of depreciation. Yet it

can yield returns as great as in highly profitable industries. The naked truth is that equitable development of efficiency in agriculture takes more capital per man than in the non-agricultural sectors of the economy. The appalling fact is that in a large number of less-developed countries it is accepted by the economic planners that to squeeze as much capital as possible out of agriculture without causing the open rebellion of the farmers is the surest, fastest, and most practical approach to economic development. The alternative of granting attractive conditions for foreign capital for industrial purposes is discarded because of nationalistic prejudices or other reasons. This idea is not confined to the Soviet countries which from the outset manipulated the terms of trade heavily against agriculture (with the inevitable result of having agriculture still under-capitalized after forty years) but it is practised in many of the Western countries as well. There it sails under the disguise of stabilization of farm prices and often is executed also by multiple foreign exchange rates which too are rigged against the farmer. The argument advanced for this sort of excessive taxing of farm income is that it grants insurance against erratic price fluctuations caused supposedly by sudden changes in the demand of the industrial countries which buy raw materials. This insurance costs the farmers a premium of 30, 40, or 50 per cent. of what the fluctuating prices would yield without stabilization.

This 'forced march tour' which many economists consider as a justifiable procedure is economically a grievous error because it weakens the necessary agricultural foundation of an industrializing economy with all the consequences of shortages of production and bottlenecks. What it also does is to squeeze people out of agriculture by greatly widening the disparity of incomes. Naturally this causes far greater hardships for the poor on the farms. This sort of raw deal for the suffering farm people and their families is incompatible with the basic principles of social justice.

If we all agree about the income differential or adverse terms of trade for agriculture, then the people involved in this tight situation deserve maximum aid to overcome their handicap. I believe that even from a sheer materialistic point of view conditions should be created by general economic policies so that farmers could form capital and use it to improve their incomes through better services to the expanding economy. Agriculture can be a profession compatible with the full pursuit of happiness only if conditions prevail in which the farmers operate by their free, if aided, initiative. This individual responsibility must apply also to the limitation of the size

of the family to proportions that are compatible with the obligations of parents to children.

M. ROLFES, *Ludwigs University, Giessen, Germany*

I speak as a worker in the comparatively narrow field of farm management and against the background of European, particularly German, agriculture. Because of this regional and professional background I feel myself in no way competent to remark on Professor Gadgil's paper.

Professor Johnson and Professor Lewis, however, make two important points which I should like to speak about. Both of them emphasize the very intimate connexion between the fortunes of farming and the dynamic growth of the general economic system, particularly in the industrial sector. In this respect both come to the conclusion which Professor Lewis expresses by saying that the ills of farmers can primarily be eased by having fewer farmers. That is the first point. Then Professor Johnson very emphatically calls attention to the considerable disparity of agricultural incomes in one and the same economic system. It appears to me that this disparity is not solely, not even mainly, the result of differences in soil and climate but is equally, and perhaps in some cases more especially, the result of the heterogenous institutional set-up of agriculture within the same country. This leads to the fact that within any one country the different sections of agriculture, because of their different institutional patterns, respond in different measure and with varying efficiency to changing general economic conditions. May I try to illustrate this by pointing out that in central European and German agriculture we have at least four different and important groups with fundamental differences in their institutional patterns and, therefore, with different possibilities of adjusting themselves to economic advance and of attaining favourable terms of trade.

One group is formed by the large arable farms which are highly commercialized and employ hired labour. This group has always been highly susceptible to fluctuations of costs and prices, but it has also shown very high elasticity in adjusting itself to change. With rising costs of labour it has very effectively replaced manpower by machines. It has been able to do so, because the size of the unit and the volume of the turnover insure a good economic return to the capital invested. The amount of capital needed on the large farms, measured per unit of land or per unit of turnover, is lower than on the smaller farms. Therefore, the investment requirements can often be met out of individual farm resources or by comparatively moderate

use of credit available on the private credit market. Outstanding examples in Europe of revolutionary adjustments to entirely altered conditions on the part of large farms can be found in Sweden, as many visitors to the Helsinki Conference observed.

The second group is that of small farms concentrating on the commercial production of special crops yielding high returns per unit of land. In our country such special crops include fruit, vegetables, wine, and tobacco. In Denmark one might perhaps include the small farms specializing in dairy products and pork. The farms in this group are not suited to mechanization but they have the advantage that they work with unpaid family labour, so the cost of labour is not important. But the group is economically more vulnerable as the products are particularly susceptible to price fluctuations, the market for such products being comparatively limited. Also there is in Europe very great international competition in this market. These farms are not easily adaptable because in any given locality there are few alternative special crops, and if they have to fall back on general mixed farming they at once become sub-marginal. There is practically no alternative to tree crops which occupy the land for a long time. In this group higher returns can be attained mainly by improving the quality of production and above all by efficient marketing.

My third group is the family farm of the mixed farming type which is so very typical of great sections of European agriculture. Compared with the first two groups the proportion of commercial production is normally lower and the proportion for domestic use on the farms tends to increase, particularly in the smaller units. This leads towards a more diversified but less flexible type of production. The less commercialization, the lower the risk due to price fluctuations, but the less the chance of making full use of a good market. The farm incomes fluctuate less though they are on a decidedly lower level. The smaller the unit the more often will this be the case. The labour situation is governed by the characteristics of the European family farm which is not only an economic but also a social unit. But even from the economic point of view there are great difficulties in transferring manpower from this sector into others. On a farm with from two to four labour units the elimination of even one unit means a very high proportional cut, while the replacement of manpower by machinery on an economic basis becomes increasingly difficult, as the unit becomes smaller and the volume of marketable products less. So, even though in central Europe some of the people on family farms can easily find alternative employment outside the

farms, thanks to expanding industrial development, this outlet cannot help those who remain on the farms so long as economically sound methods of mechanization are lacking. In other words, modern economic development tends to render a considerable section of family farming sub-marginal if we apply the economic standards of today. The very obvious solution of this dilemma is, of course, to increase the size of farms in order to make them amenable to mechanization. Such a trend is indeed visible in the family farm section of a number of European countries. Not only is it reinforced by government policy, but there is also a very real tendency for farmers to increase the size of family farms from their own resources. In both cases the capital requirements are normally higher than for large farms because capital is needed not only to increase the size of the farms but also, usually, to improve their antiquated lay-out. Only then is the stage set for capital investment in mechanization proper. Even if the fullest possible use is made of hired or co-operatively owned equipment, the capital requirements are usually so high that the great bulk of family farms cannot meet them from their own resources or by private credit. Thus, in a substantial section of European agriculture the problem is one of State policy. There remains the problem of finding land for enlarging full-time family farms. There are two sources. In some European countries, land reclamation provides considerable areas, as in Holland and Italy; the other possibility is to shift land from one section of agriculture to the other. The section from which land is now mainly forthcoming in Germany is a fourth type of institutional set up—part-time farming.

The part-time farm family combining wage earning in industry with the operation of a small farm was the first and very widespread response of family farming in many parts of Europe to the advent of industrial outlets for superfluous farm labour. This flourished for at least two generations but now, under the impact of an ever growing, ever more readily accessible and ever more diversified industrial labour market offering higher incomes and greater economic security than can be found in small scale farming, the institution of part-time farming in its traditional form is crumbling in Germany. It would have done so more rapidly had we not had two world wars with two periods of food shortage and two periods in which land appeared to be the only secure form of property. The degree to which efficient full-time family farming may take its place is also correlated, apart from psychological considerations, with the volume and structure of available non-agricultural employment.

Therefore, in summing up, I may enlarge the statement of Pro-

fessor Lewis when he says that the remedy for the ills of farmers is to have fewer farmers, by making three points: first, to use this remedy effectively the non-agricultural sector of the economy must be in a position to absorb the surplus manpower of agriculture; secondly, in such measure as we take manpower out of agriculture we must put capital into agriculture; and, thirdly, the ease with which manpower may be moved out of agriculture, and the cost of doing so, are greatly influenced by the institutional structure of agriculture itself.

A. M. SACO, *Joint E.C.L.A./F.A.O. Programme, Santiago, Chile*

The term under-developed is very inadequate as a description of the condition of many different countries. If you take Latin America, for example, you find entirely different degrees of development. Too often you hear generalized assertions referring to under-developed countries which do not fit all cases. All the so-called under-developed countries tend to be lumped together and viewed as a whole. For instance, in the case of Latin America again, the average agricultural production per head is quite unsatisfactory, but if you exclude Argentina the position is somewhat more encouraging. This means that when one analyses the progress of the under-developed countries some distinctions of this sort should be made.

It is not my intention to deny the fact that in some Latin American countries agricultural production is lagging so much that there is at present a deterioration in the levels of nutrition. I can mention particularly the case of Chile where a recent study by the Economic Commission for Latin America shows that the protein intake has fallen during the last ten years.

I would point out too with regard to the under-developed countries that economic theory itself is under-developed. While listening to the previous speakers I was wondering among other things about the relationship between demand and productivity in the under-developed countries. If demand does not increase, prices do not rise and the opportunities for a farmer to use more productive methods may not exist. However, the precise effect of demand on changes in productivity and efficiency is something about which we have no clear idea.

Let me give an instance of what would happen to coffee production if productivity did not increase and salaries and wages go up. Through a recent study on coffee productivity in Salvador we found that to produce one kilo of coffee takes about three man-hours. (We are currently making a similar survey in Brazil and have finished

another in Colombia.) If you were to apply the price of labour in the United States to these three man-hours, you would arrive at a figure of about U.S. \$1.90 per lb. of coffee. This is for labour only. It does not include other physical inputs such as fertilizers, and it does not include rent, interest on capital, transport, and many other items. What would happen, then, if the cost of labour in these countries reached the same level as in the United States? I am afraid that nobody would be able to drink any coffee. In Brazil I found that in order to keep the labourers on the coffee farms the farmers were doing little to improve productivity. For instance, they would not use cultivators or herbicides because they must have enough regular workers for harvest. So I have asked my colleagues who are making the survey in Brazil to determine the possibilities of using mechanical equipment and the effect it would have on the labour situation.

W. H. BECKETT, *Agricultural Economics Research Institute, University of Oxford, England*

I have lived about half my life in Africa and it is through those eyes that I should like to look at these papers.

Professor Gadgil called our attention to the limitation and interpretation of the data, particularly the data of the total product. This calls to mind other difficulties, some of which we make for ourselves. There is, for example, the assumption, a basic assumption but one which may not be always valid, that agriculture on the one hand and industry on the other will remain much as they are. In the world time scale there are three periods: first, pure subsistence agriculture without industry; second, the world in which we now live; and third, the world into which we shall move. That future world is one of automation, atomic energy, and space travel, and in that world agriculture and industry may be contrasted much less than they are now. One small example may be taken from this country, which has been a pioneer together with some other countries in the study of hydroponics, or soil-less culture. In the future we may see the extractive industries ceasing to function because they are already worked out, and agriculture supplying the raw materials to replace those which are now supplied by the extractive industries. It may be, of course, that the harvest of the sea will equal the harvest of the land. This first assumption is underlined by the use in these papers of the words 'farming', 'agriculture', 'food production' as if they were almost synonymous. In the world into which we are moving this may not be so and the whole of our manner of approach may be different.

Another assumption is what I would call for want of an accepted term the fallacy of *ceteris paribus*, of other things being equal—the assumption that in all our work, in all our analyses, we can isolate certain factors and examine them. This, of course, is the difficulty which Professor Gadgil brought to our notice in the use of global figures or total product figures. It is too easy to take a simple time series, arrive at a correlation or production function and then move smoothly to some causal relationship. We, as agricultural economists, as do economists in other fields, make this assumption which, I submit, is not valid. I believe that one of our difficulties arises from this fact, the difficulty that eminent economists in different countries and in different periods look at the same data and arrive at opposite conclusions. We use over-simplified models in practically everything we examine. But the situations are so complex, especially in agriculture, and the factors so many, that it is impossible to bring them within the compass, not only of calculating machines, but even of the new electronic computers. I would ask agricultural economists to help to do for econometrics what Sir Roland Fisher did for biometrics in its application to field experiment more than thirty years ago. That is to develop new statistical procedures more suited to our field of study, and always to assess the validity of our data and the significance of the results which we use—to make some assessment of the total variance before we draw conclusions.

O. SCHILLER, *Institut für Agrarpolitik und Sozialökonomik des Landbaus, Stuttgart—Hohenheim, Germany*

Professor Lewis has told us that if there are still too many farmers it is because too many people want to be farmers. I would say that many farmers, especially in less fully developed countries, are actually bound to the land not by desire or choice but by necessity, tradition, or birth.

Professor Gadgil's paper made it clear that there is one statistical figure which is very important for all our calculations and considerations, namely the percentage of agricultural to total population. He mentioned, for instance, that in the Latin American countries the percentage of agricultural population in the years from 1940 to 1955 declined from 59 to 49 per cent. Such figures are very important, but in many countries we cannot be sure about them because the statistical data are not sufficiently reliable; we have not yet developed a satisfactory statistical method. In my investigations in Pakistan villages I was surprised to find that many more people than the records show

have earnings outside agriculture. They are recorded as agriculturists because of tradition and social prestige, but they are living either partly or wholly on income not generated in agriculture. Actually they should be shown in the statistics as part-time farmers or non-agriculturists.

I do not doubt the correctness of Professor Gadgil's statement that with the rapid growth of world population the situation is getting worse. I do not say that in all cases the percentage of agricultural population is lower than we believe. My point is that we should be careful in using this figure because it is one upon which many of our calculations are based. In using it I suggest we should allow a margin of the order of perhaps 5 per cent. and meantime try to improve our statistics.

R. SAVARY, *International Federation of Agricultural Producers, Paris, France*

It is interesting for me to hear how the economist's approach differs from that of the farmers who are personally concerned with the problems of agriculture. Of the valuable things which have been said by previous speakers, I appreciated most the statements of the two members from Germany. The line they have taken appears to be entirely in agreement with the ways of thinking of our membership, not only within western Europe but in most countries engaged in agriculture.

The debate this morning had much to do with agricultural productivity, its improvement and its reward. We have heard many references this morning to productivity in relation to farm earnings. I would like to point out that it is not true that throughout the whole economy, including production and services, everyone is always rewarded according to his productivity. To put it another way, there is a very large and increasing section of the economy whose rewards are increased because of better productivity elsewhere. A very simple example is a telling one. The technique of hairdressing has made little progress for centuries. All the same, when we go to a barber's shop we see that the cost of the haircut and therefore the salary of the man who cuts our hair is increasing in line with the rise in salaries and the rise in productivity in industry. I wonder whether the farmer, even if he is unable to achieve the same rate of progress in productivity as is achieved in the industrial sector, should not similarly benefit by increases in productivity in that sector. When one considers the present economic status of the bulk of the farm population in most countries it is difficult to escape the conclusion that they

are entitled to some share of the increased productivity and better rewards in other sectors.

D. R. GADGIL (*in reply*)

Dealing briefly with Professor Brandt's remarks on price policy, I note that he agrees that efforts should be made by governments to eliminate seasonal fluctuations. I am afraid that a policy which tries to do that without some element of long-term stabilization would be very difficult to devise and administer. Secondly, a stabilization policy in the long term need not necessarily result in a withdrawal of capital from agriculture. It may result in taking away some resources at certain points of time from individual agriculturists. But, properly directed, there is nothing in stabilization policy as such which is necessarily associated with taking away capital from agriculture as a whole. Thirdly, I should challenge a very general thought that is going about nowadays to the effect that it is humane to leave agriculturalists alone, that treating them as human beings largely means doing nothing about their present condition. In entering a very strong caveat against this approach I would only bring to your notice the fact that in the under-developed countries all classes, including the biggest businessmen, are asking for all kinds of government intervention, subsidies, tariffs, financial help, organizational help, and so on. I am suspicious of the plea that if you do something for the farmer he may not become self-reliant. At least I feel, as a co-operator of some standing, that policy in relation to agriculture should not be influenced by such fears.