ECONOMIC THEORY AS APPLIED TO AGRICULTURE

G. D. AGRAWAL P. C. BANSIL



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PREFACE

AGRICULTURE plays an important role in the economy of the country. With the emphasis on economic planning, of which agricultural development is an essential constituent, demand for agriculturally trained personnel for employment in various fields is increasing every day. With the nationalization of 14 major banks, Government efforts are being directed towards the financing and development of agriculture more vigorously. To meet this increasing demand for agriculturally trained personnel, a number of new agricultural colleges and universities are being opened. But the subject of agricultural economics being a comparatively new discipline in India, its study has suffered due to lack of suitable literature with Indian illustrations.

With the growing importance of agriculture, particularly when the country is wedded to the goal of self-sufficiency in various agricultural commodities, besides the student community even an average citizen is interested in understanding the intricate problems of agriculture as studied in the plain of economic theory. This is a big lacuna which must be filled, if various progressive measures now being adopted by the Government are required to be understood, both in their theoretical and applied aspects, by the intelligentsia.

Major economic problems with particular reference to Indian agriculture have not been discussed at one place in the available literature. The result is that students of agricultural economics in the universities and research institutes find it extremely difficult to understand the basic principle of economics as applied to agriculture. This study has been primarily organized to overcome this difficulty. It creates the necessary background in the elements of economics to understand and appreciate the economic problems facing Indian agriculture which have been dealt with by us in an earlier book, *Economic Problems of Indian Agriculture*. PREFACE

If this is so, this work fulfils its objective well which is limited to make the study of agricultural economics easy and stimulating for the students, politicians and all those who are interested in the economic development of the country.

> G. D. Agrawal P. C. Bansil

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CHAPTER ONE

NATURE AND SCOPE OF AGRICULTURAL ECONOMICS

THE SCIENCE of economics is based on the scarcity attribute of materials and services. Water and air which are usually abundant and obtained free, although essential to life, have no value in the economic sense. In economics, only those goods and services are treated as wealth which have value in exchange. Value in exchange is possessed only by goods and services which have utility but are limited in supply. With this interpretation of the term "wealth," economics as a science is the study of behaviour of human beings in relation to the process and the problem of social adjustment in respect of scarce goods.

Observation has it that the resources (or means) have alternative uses. If put to one use, there might arise scarcity in another. These resources have to be utilized so as to achieve maximum productivity. The resources have, therefore, competing uses: the economic problem arises when a resource has to be optimally allocated before different uses. Some resources are also substitutes. Thus there is the problem of inter-relationships between resources.

The study of inter-relationships among the different resources of the farmer and of these resources with farmers and community comprises the subject-matter of "Agricultural Economics." With the addition of the qualifying word "Agricultural" before Economics, its implication does not substantially change. Only the domain or the field of studies in it becomes limited to agriculture, the farmer, and the community at large in its dealings with the farmer.

One of the earliest definition of "Agricultural Economics" states that it is that branch of agricultural science which treats of the manner of regulating the relations of the different elements comprising the resources of the farmer, whether it be their relation to each other or with other human beings in order to secure the greatest degree of prosperity to the

enterprise (Jouzier). This definition has been modified to embrace the prosperity of the community and the economy as a whole and not only of agriculture and the farmer as before. According to Taylor, "Agricultural Economics" deals with the principles Dr. which underlie the farmer's problems of what to produce, how to produce it, what to sell and how to sell it, in order to secure for himself the largest net profit consistent with the best interest of the society as a whole. More specifically, Agricultural Economics treats of the selection of land, labour, and equipment for a) farm, the choice of the crops to be grown, the selection of livestock enterprises to be carried on, and the whole question of the proportions in which all these agencies should be combined. These questions are treated primarily from the viewpoint of costs and prices. It deals not only with the economics of production but also with problems of justice in the distribution of wealth amongst various classes.

The contention has long lost its force that "Economics" or for that matter "Agricultural Economics" simply makes known the relations of various inputs to each other, to the final product, to the farmer, and to the society in general. It does not prescribe anything to the farmer, society or government to increase or decrease the prosperity of agriculture and the welfare of the society through it. In fact on the basis of information about the various relationships, one interested in a particular result may choose a particular assortment of factors of production to achieve the desired goal. Knowledge is chiefly valuable in so far as it is "fruitbearing rather than light bearing," although "light" is essential to produce "fruits." Agricultural Economics is playing an increasingly important role in respect of guidance on efficient production, distribution, and consumption of agricultural produce.

It has been truly said that science and art cannot be divorced. This is more applicable to an applied subject. Knowledge has been divided into "Arts" and "Science." Arts are creative, but sciences are factual. Agricultural Economics is both creative and factual. Studies in Agricultural Economics help, with the information made available through them, to arrive at rational decisions on policies and actions. With the emphasis on economic planning, the formulation of agricultural policy has assumed considerable importance and agricultural economists are playing a significant role in the preparation of national plans and agricultural programmes

Divisions of Agricultural Economics

Agricultural Economics is divisible into five parts: (i) economics of production; (ii) economics of distribution; (iii) economics of consumption; (iv) economics of marketing; and (v) economics of planning and policy-making.

Each of these divisions can be further sub-divided. One of the sub-divisions of the economics of production, for instance, relates to the study of factors of production or farm resources at the individual and national levels. This deals with the combination or the way the use of national and individual farm resources will maximize welfare, satisfaction and economic returns and also how a wrong assortment will reduce income and satisfaction accruing to the individual and the community. The other sub-division relates to the environment or the institutional set-up conducive to efficient production, distribution, and maximum welfare. For example, it is not enough to have only the proper combination of land with the various other inputs to achieve optimum agricultural production, it is also necessary to have proper land tenure and taxation systems which provide the needed motivation to the actual tiller of the soil to increase production. If rents and taxes are exploitative, the farmer may have no interest in increasing production. Similarly, knowledge about the right amount and kind of capital needed for running efficiently a farm enterprise is not sufficient in itself, there should be an arrangement by which the farmer may have easy access to such capital at a reasonable cost.

Economics of Production

Agricultural production is getting complex. It is assuming the characteristic of a business rather than a way of life as in the past. A farmer, therefore, has to have sound technical knowledge as to how to plant, when to plant, where to plant, etc. He should also

understand clearly the relations between the various inputs needed in each farm enterprise to reach the most efficient production level at given factor and product prices. Similarly, he should know what combination of various enterprises will lead to the raising of profits and satisfaction. It makes no difference whether farming is for subsistence or for market. In both the cases, the farmer must use his farm resources optimally to get the maximum results. He must have an understanding of institutional set-up relating to land, credit, marketing, taxation, etc., favourable or adverse to production in order to influence government decisions. farm The answers to economic problems of farm organizations and management when worked out in relation to the individual farm unit belong to the domain of "Farm Management" which forms a subject by itself. But answers to these questions at the regional, national, or international levels are more appropriately covered by Agricultural Economics. The study of environment and institutional arrangements also belongs to Agricultural Economics.

As pointed out earlier, the study under "economics of production" is not confined only to the analysis of factor-to-factor and factor-to-product relations but embraces the entire socio-economic environment in which farming has to operate; included in it is the study of the farmer's relation to other elements of economic system, such as land tenure, farm credit, labour, taxation, and various state laws and regulations affecting agricultural production, sale, etc. Direct and indirect regulations are often adopted to restrict the production of a number of agricultural commodities. Under the International Commodity Agreements, various countries are committed to restrict production of certain commodities. Floor and ceiling prices in agriculture are fixed by a number of countries. Economics of production also includes studies of economic institutions and agricultural laws having bearing on agricultural production and distribution.

Economics of Marketing

Marketing efficiency depends on proper relationship among various agencies and services operating there. Therefore, those relationships are examined to provide guidance on when to sell, how much to sell, where to sell, the type of marketing services and transport facilities needed, the spread-over of marketing costs, the farmer's share of the consumer's price and profit margins of various middlemen. The various governmental regulations with bearing on marketing, middleman's profits, farmers' share, price paid by consumers, export and import policy, and international agreements form the subject of "economics of marketing."

In agricultural production, emphasis is shifting from production for subsistence to that for marketing. Technological advances and changes in the tastes of consumers are bringing in the advantages of economy of scale and making the processing of farm produce a specialized job. It is profitable to process farm produce on large scale in a factory if only to reap the benefits of the scale. Thus, in addition to "production economics," "marketing economics" has also assumed importance in recent years.

Economics of Consumption

This part of Agricultural Economics has received a little attention, only recently. It deals with the maximization of the welfare of the farmer by guiding him in judicious household expenditure and constant review of price parity between what the farmer sells and what he buys. The subject of terms of trade-whether these are becoming favourable or unfavourable to the farmerhas assumed importance with the organization of farmers' unions and increasing attention paid by the government to the welfare of community. This division also includes the the farming study of incidence of various taxation measures on articles entering a farmer's consumption. A timely warning checks the government from taxation measures likely to cause hardships to farmers. The need for judicious use of farm incomes for family living has led to the development of home economics.

Economics of Distribution

This part deals with the rewards of the factors of production. Without payments, no production can be carried on; hence wages are paid to labour, interest for the use of capital and funds, and rent for that of land. Profits are rewards reaped by the entrepreneur for his adventure, risk-taking, and uncertainty bearing. These are some of the principles which govern the distribution of wealth in the society. The distribution problem has assumed importance in recent times, due to the growing inequalities of wealth and income, and on account of noticeable injustice in the process of distribution. With the rise and spread of leftist ideologies and greater attention being paid to the uplift of agrarian societies, the economics of distribution has received more importance.

Under "economics of distribution" would be discussed principles for the determination of rent, wages, interest, and profit, with special reference to agriculture. In fact, so important are these topics that each will be given a separate chapter for its detailed discussion. The general theory of distribution as applied to agriculture in general will also receive the attention it deserves. In addition, there are bound to be some relevant observations on the problem of justice in distribution.

Economics of Planning and Policy-Making

A vast literature, with a conspicuous emphasis on growth and welfare has grown around the subject of planning and policy-making. All over the world, there is extraordinary stress on the planning policies and practices. In agriculture (and in agrarian structures) more than anywhere else, there is an urgent need for planning. Agrarian societies are universally lagging behind with the result that they are depressed and "underdeveloped," and even povertystricken. In order to pull them out of this morass, planning is the prescribed remedy—the only remedy. Planning, when applied to agrarian structures, has to undergo a marked change, and becomes altogether different from what is when evolved in the industrial societies. Priorities are different, processes are different, and preferences are different. Planning has now risen to the status of an independent discipline. In agriculture, planning may be confined to crops (crop-planning), or to the overall structure of agriculture or to its systems, etc.

Interlinking of Departments

All the above parts are interlinked, and none can be studied

without reference to the others. In fact, the whole subject of Agricultural Economics is not covered within the purview of the departments enumerated above. So vast is the canvas of Agricultural Economics that it cannot be encompassed within the narrow range of these departments.

Production is intimately connected with consumption from which it stems, for consumption indicates the avenues fruitful for the producer. Also consumption standards of any people are circumscribed by the productive capacity there. Production remains incomplete without marketing. From the strictly economic point of view, the act of production is complete when the article is in the hands of the consumer -this is done by efficient marketing. Again, marketing has to take cognizance of the nature of the produce, evidently the marketing function will differ from commodity to commodity. Both are intimately interlinked. Production is also dependent to a great extent on the distributive processes in the economy: the availability of productive factors is determined to a great deal by the act of distribution, which in turn is influenced by production -it is out of the gross national product (call it national dividend) that the rewards to the factors of production are given. And, lastly, production, like all economic activity, is affected by planning and its priorities. But the production system influences in no inconsiderable measure the shape of planning as well.

Consumption, too, has its intimate links with other parts of the economy. For instance, no act of consumption can be possible without the consumeable articles having been marketed. And marketing has also to be selective in respect of the commodities. Consumption has to be given consideration in respect of its pattern and the choices of the consumers. Again the nature of consumption standards does in no small way depend upon the design of *distribution* which, in turn, determines the shares of each class of consumers who are also producers. And modern economic analysis informs us that consumption is linked with *planning* in ways more than one. In fact, all planners have to take stock of the desired standards of living, and consumption levels depend upon the performance of the planners. A moment's reflection will convince that the levels of consumption can never be what they are unless efficient marketing exists. Marketing processes undergo a change with the schange in consumption patterns. Economics of consumption is thus a basic part of Agricultural Economics.

The Economics of distribution has special links with *planning* and policy-making. *Planning* is generally motivated for improving the distributive system in an economy for introducing an element of justice in income distribution, and finally to remove the disparities of wealth and income. Distribution has its effect upon planning, which draws its resources from the financial and economic resources in the economy –a function of distribution. Thus, no hard and fast line of demarcation can be drawn between the different divisions and branches of economics. But economic analysis has also to be divided from the functional angle into micro and macro economics.

Micro and Macro Economics

When generalizations are made from the individual (farm and farmers in this particular case) cases, the process is termed micro analysis. When the group is studied as a whole, as was done by Lord Keynes, the system is termed as macro analysis. In Agricultural Economics, both the micro and the macro systems of analysis are in vogue, for there is a predominance of individual farmers whose individual economic activities form an important part of the whole. But in policy-making, it is the macro type of analysis that assumes greater importance, for the planner and the policy-maker has to take account of the whole economy rather than individuals and their farms. In sum, the micro and the macro economic analysis have to be applied in agricultural economic analysis and policy.

Statics and Dynamics

Static and dynamic analysis occupy important place in economic theory. One of the important assumptions of economics is that "other things remain equal," which means that the disturbing factors are ignored. Tastes remain unchanged, incomes remain unchanged, progress does not take place—all impossible assumptions. Still *static* analysis proceeds on this basis, and leads to some interesting and important conclusions. When these *static* assumptions are shed away, and the economy is studied under progressive conditions, the approach is *dynamic*. In Agricultural Economics, the analysis is both static and dynamic. It is static, because of the simplicity of approach and because of the comparatively slow rate of progress and change. Conclusions of static analysis are no doubt valid in Agricultural Economics. Still, there is need for dynamic analysis and this is being increasingly applied for obvious reasons.

Scope of Agricultural Economics

The above discussion of the subject-matter of Agricultural Economics makes clear how wide is its coverage, from an application of economic principles to farm organization and management on the individual farm as the primary unit of production, i.e. at the micro level and then at national and international levels, to the formulation of agricultural policies and enlightenment on relations between farmers and the community, the States and the individuals and the institutions which deal with the farmers in supplying farm requisites, sale and processing of farm products, credit, etc. It is the enlightenment which leads to a better understanding and co-operation between the farmers, the State, and various institutions which provide economic service to the farmer. A historical study of relations between the farmers and the State, society and economic systems, i.e. land tenure, credit, taxation, etc., of relations of farming inputs to each other and to end products, and the lessons drawn from them, and further suspstantiated with analytical studies and theoretical models are contributing greatly in raising efficiency in agricultural production and marketing and in increasing farmers' welfare and with it the total welfare of the human society.

The State gets considerable guidance in taking right steps in making agriculture more productive and varied in order to meet the needs of the society. An increasing development in agricultural economics is the increasing collaboration among nations in orderly production and distribution of farm products. There is a growing realization of uneven distribution of agricultural resources among various countries and of the special responsibility of the countries

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which command surpluses to those which do not produce enough food for their people. This is a new field in which agricultural economics can play a very useful role in defining relations and allocating agricultural resources to their best use at the international level through well-conceived international commodity agreements.

Development of Agricultural Economics

In India considering the vast size of agricultural population and the predominant role of agriculture in the total economy, the provisions made for investigations and research in agricultural economics have been too small. In the absence of a well-conceived and continuous programme of research and even the analysis of data which were collected mainly as a byproduct of administrative needs, the teaching of agricultural economics has also suffered. The success has been imited even from the point of view of the small financial provisions made because of the lack of workers in agricultural economics with basic education in both agriculture and economics. Farm management investigations were started in the country as late as 1955-56. A number of agro-economic research centres have also been set up.

A separate division of Agricultural Economics was established at the Indian Agricultural Research Institute in 1962. Difficulty has been experienced in filling positions in these projects with suitably trained and experienced staff. A proper coordination between agricultural economics and technical agricultural research programmes is yet to develop. Similarly, an extension service in farm management has yet to find a place in the general agricultural extension programmes. Agricultural policies have been and are being formulated with scanty understanding of the relations of inputs to each other and to the various other elements of the economic system. But with the growing appreciation of the need for agricultural economics research and training, provision is being made for necessary facilities and the picture is brightening. Similar difficulties in the development of this subject have been faced elsewhere as well in the early stages to a smaller or large extent. As compared with the period prior to 1955, with the setting up of the Planning Commission, the allotment of funds and the appointment of staff in agricultural economics have increased many fold.

CHAPTER TWO

AGRICULTURE AS A PRODUCTIVE ACTIVITY

THE PHYSIOCRAIS in their search for the natural order formulated doctrines which led to the adoration of agriculture. They believed that agriculture alone produced the wealth of the community, and that, in contrast to this "productive activity," all other occupations, however laudable and necessary, were "unproductive" and "sterile." "Agriculture," said Quesnay, "is the source of all the wealth of the State and of the wealth of all the citizens." Everything that is disadvantageous to agriculture is prejudicial to the State and the nation, and everything that favours agriculture is profitable to the State and the nation. The physiocrats further said that the agricultural nations alone can form empires which are firm and durable.

Adam Smith objected strongly to the physiocratic notion about the exclusive claims of agriculture to productivity. But he ranked agriculture as the first in creating wealth. Manufacturing was placed second and trade third. Similar views have been held about the importance of agriculture by several other economists including Marshall. Thinkers like Barker, Wilson, Baroodi, and Humphries believed that agriculture was fundamental to the world economy. But Davis refuted this theory by saying that "agriculture is not uniquely basic, and the prosperity of a nation depends largely on other factors than the work of those who till the soil."

Whatever the view expressed by the various thinkers, farmers are a vital part of the arterial system of circulation through which flow the goods and services of the national economy. This is true of a developing economy as well. Economic progress may mean a decline in the relative importance of the primary industries and an increase in the relative importance of the tertiary ones with the secondary pursuits holding their own. This can be judged from three indicators: (i) percentage of persons employed in agriculture; (ii) proportion of persons living on the farm; and (iii) percentage of national income derived from agriculture.

In absolute terms, agricultural productivity may rise even when

the percentage of people engaged in agriculture declines. For example, the U.S.A. is able to produce a much larger quantity of farm products now with 15 to 16 per cent of its working population engaged in agriculture as compared to the past when more than 50 per cent of her total working population was so employed.

Broadly speaking, no one can dispute the fact that in spite of tremendous growth in world trade in agricultural commodities and some countries having reached the stage of production which can meet the entire agricultural demands of other countries, no nation can still afford to ignore agriculture. The reason is that agriculture meets the primary needs of man—food, raw material for clothing, shelter, etc. Nations, however prosperous, cannot live without food nor is it correct to depend on other nations for such a basic necessity as food.

Relationship with the General Economy

All branches of national economy all over the world are closely interrelated. National economic development is closely linked with that of individual economic activities. The industrial revolution in Europe would not have been possible without agricultural revolution having preceded it. There can be no sustained development of agriculture, if the other sectors of the economy do not grow and absorb the products of agriculture in larger quantities. The growth of agriculture, therefore, sustains a certain level of growth in the general economy and there is a direct relationship between the two.

If industry is to develop, it needs raw materials, primarily of agricultural origin, to feed it. Labour force has often to come from the rural sector. The demand for agricultural products thus created and the withdrawal of surplus manpower from the rural areas are themselves the contributory factors to the progress of agriculture.

During economic growth there is a shift of population from agriculture and a consequent rise in the demand for foodgrains and raw materials. Agriculture has to meet this demand. If it cannot, the terms of trade become unfavourable to sectors other than agriculture in the economy and their progress may be affected adversely.

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One may argue that the necessary raw materials and food may be imported to meet the increasing demand from other developing sectors. But there are limitations of foreign exchange. On the contrary, there are examples of countries which supported the growth of industries by earning foreign exchange from the export of farm products. Yapan during the period of rapid econ mic development (1887-1914) siphoned off agricultural surpluses by heavy land taxes which constituted 45 per cent of the total tax revenue in 1893-94. Similar was the strategy in Russia during reconstruction of her economy after the Revolution of 1917. Thus in the early stages of economic growth, agricultural development may provide the necessary capital for industrial progress, particularly in countries with a predominantly agricultural economy.

The agricultural sector itself provides a market for manufactured goods. Besides the consumption of inputs like fertilizers, insecticides, and farm machinery by farmers, villagers also form a sizable part of the consuming population for necessaries like sugar and textiles. The rural demand for these consumption and production goods depends upon agriculturists' purchasing power. Progress and improvement in technology and science, which are an index of the progress of a national economy, help the growth of agriculture as well. New machines, fertilizers, and ncw methods of control of pests accelerate the development of agriculture. Innovations in storage and warehousing have gone a long way in diversifying agriculture and ensuring its sustained growth. The expansion of international trade, foreign exchange, transport, and banking developments also aid the development of agriculture. In an agricultural country like Argentina (and even India), foreign demand for farm products expands their production at home, otherwise their production would be limited by the home demand. With increased transport and communication facilities, internal demand rises as well. Such an interdependence of the various sectors of the economy has naturally its repercussions. Each sector is influenced by the progress in technology. Depressions or inflations in one sector are shared by the others; more so with the growth of money economy and production for market. A change from subsistence to monetized economy increases the interdependence of all the various sectors of the

economy. The differences in response to change of some sectors from others may only be in degree due to a time lag. Therefore, for any sustained growth in one sector, there must be simultaneous progress in the others. It is rather hard to visualize a situation in which one segment of the economy should be left far behind the others for a long period.

Peculiarities of Agriculture

It is appropriate at this stage to notice some of the peculiarities of agriculture, and some of its distinctive traits. Briefly it is a basic industry marked with uncertainties, limitations, and immobilities. It is characterized by slow turnover, perishability of its produce, inelastic demand, joint supply, and production in scattered and small units. Each of these peculiarities are studied below.

Basic Industry. Agriculture is the basic industry supplying the primary needs of man. Therefore, it has everywhere special significance. No nation can afford to neglect it. If required, agriculture has even to be protected.

Uncertainty. Agricultural production is characterized by a high degree of uncertainty. Agriculture, being a biological activity, is subject to the vagaries of nature. A large number of physical factors like soil, temperature, precipitation, evaporation, latitude, altitude, and accessibility serve as limiting factors in man's effort to improve agriculture and he has hardly any control over them.

Technological progress places more and more power in the hands of man to overcome these limitations but he is still far from controlling them completely. Sometimes some limitation is overcome, e.g. irrigation to neutralize low rainfall; but then another problem crops up, e.g. water logging in U. P. and Punjab.

Agriculture faces grave danger from innumerable crop pests and diseases. In 1946-47, rust was responsible for practically a total failure of wheat crop in India. All poultry stock may be wiped off by an outbreak of an infectious disease-bacillary, white diarrhoea or New Castle disease.

Limited Land. The limited area of land places severe limitations on the efforts of man to expand his activities, no manufacturing industry suffers from such a handicap. In a majority of manufacturing and industrial undertakings, fresh application of capital brings in a remunerative return at least favourably comparable to that already accruing. A number of industries may even yield increasing returns. But in agriculture the application of the law of diminishing returns is more pronounced than in any other industry.

Immobility of Production. All other industries can adjust their production at short notice in response to the changing pattern of demand. This is not possible in agriculture. A tea or a rubber plant would take seven years to come into production. The economic life of the plant may be about 30 years. This period may be nearly double in the case of coconut. Once planted, the planter is in no position to alter the course of production. Even ordinary crops like sugarcane take about a year to mature. It often happens that attracted by the prevailing high prices, the farmer devotes larger areas to such supposedly lucrative crops. But when the price falls later, he can hardly restrict the production until the next sowing season, when he may plant a smaller area. The price may go up, but he cannot increase the production once the the planting is over. And many of the farm products are perishable and cannot be stored for long. This adds to the existing farm immobilities. Agriculture faces much greater price risks in view of its inability to make quick adjustments in supplies to changes in demands.

Slow Turnover. Agriculture is a seasonal industry. Production comes out only at specific periods during the year. The turnover is slow. This creates problems of transport, marketing, credit, etc. The turnover cannot be raised at a short notice.

Perishable Products. Agricultural output as compared to industrial goods is perishable. This raises problems of storage and refrigeration. This is not the case in the industrial sector. Processing industries have, however, been helpful in overcoming the perishability of agricultural products.

Inelastic Demands. The demand for agricultural products, like cereals, is more or less inelastic. There are, however, other products like fruits, vegetables, sugar, milk, and meat, which may have a high elasticity of demand in ill-fed and underdeveloped areas.

Nonetheless, as compared with industrial products, the demand for most farm products is less elastic.

Joint Nature of Products. Agricultural products are generally joint products. Chaff must come along with the corn and sawdust with timber. Efforts are being made to put the by-products to some economic use.

Production in Small and Scattered Units. Agriculture is scattered over a large area and the farms are small tiny units. This raises organizational difficulties which are absent in industry. Organizing producers, even on a regional basis, is not easy. Economies of large-scale production and division of labour are not practicable in agriculture to the same extent as in industries. Production in small units raises special problems in agricultural extension, community development, and credit services.

Contribution Towards National Income

It is interesting to note that with industrial development, the share of agriculture declines progressively. In the United States, agriculture hardly contributes 4 per cent in the total national income, while the corresponding figures for Pakistan and India are 48 and 46 per cent respectively. (Table 1)

Occupational Distribution

From early times, agriculture has been one of the chief occupations of makind the world over. Need for food and clothing compelled ancient man to engage himself in agriculture. Other occupations were evolved in the process of civilization. Even today more than half the world's labour force is directly engaged in agriculture. There is a wide variation in the number of persons employed in agriculture in the various countries. In the United States, it is only 6 per cent of the entire labour force. It is as high as 78 per cent in Thailand and 55 per cent in Korea.

Since most of the secondary occupations are based on agricultural produce, large numbers of people are engaged in processing food stuffs, plant and animal fibres, and forest products. The exchange of agricultural and forest products in the raw or finished form accounts for more than half of the international trade. Agriculture

TABLE 1

PER CAPITA INCOME, SHARE OF AGRICULTURE AND INDUSTRY IN GROSS DOMESTIC PRODUCT AND POPULATION DEPENDING ON AGRICULTURE FOR SELECTED COUNTRIES (1965)

Name of the country	Per Share Share Percen- capita of of tage income agricul- industry of in ture in in GDP popula-		ercen- tage of	Percentage share of Agriculture in forcign trade		
	dollars (GDP (p (per cent)	per cent)	tion depend- ing on agri- culture	Exports	Imports
1	2	3	4	5	6	7
China (Taiwan)	185	26	24	47	63	32
Japan	694	12	29	24	8	44
Korea	102	41	21	55	35	50
Pakistan	95	48	12**	• 74	63	28
India	91	46	20	70	38	35
Ceylon	131	43	7	55	97	60
Burma	61*	33**	* 16*	* 62	94*	* 18
Thailand	109	33	15	78	80	12
Australia	1,620	12	34*	• 10	81	14
U. S. A.	2,910	4	34	6	29	30
Yugoslavia		28	38	47	37	31
Poland		23	51	36	22	31
Italy	884	13	31	24	16	39
Argentina	720	17	37	20	94	18
Israel	1,075	9	25	12	35	25

SOURCES: Statistcal Year Book, U. N., 1967; Production Year Book, F. A. O., 1966; Year Book of Labour Statistics, I.L.O., 1967; Trade Year Book, P. A. O., 1966; India, Pocket Book of Economic Information, 1967.

*1963. **1964.

TOCK IN THE MAJOR COUNTRIES OF THE WORLD

.1rea	:	' 000	hectares
Production	:	'000	tonnes

Coffee			Ca	ttle	Buffaloes		
r	Area	Production	Country	Number (thousands)	Country	Number (thousands)	
	14	15	16	17	18	19	
	3,632	13,656	India	188,800	India	56,539	
		(35.27)		(17.56)		(46.78)	
ia	854	4,051	U.S.A.	108,862	China	28,608	
		(10-46)		(10 13)	(Mainland)	(23.67)	
		1,850	U.S.S.R.	93,028	Pakistan	8,690	
		(4 78)		(8 65)		(7.19)	
	300	1,850	Brazil	90,505	Thailand	6,900	
		(4.78)		(8.42)		(5.71)	
ia	314	1,171	Argentina	47,000	Philippines	3,633	
		(3.02)		(4 37)		(3.01)	
oast	471	1,300	Pakistan	35,550	Indonesia	3,000	
		(3-36)		(3 31)		(2.48)	
dor		1,170	Mexico	33,092	Nepal	2,781	
		(3 02)		(3.08)		(2.30)	
ıla		1,002	Ethiopia	25,490	UA.R.	1,646	
		(2 59)		(2 37)		(1 36)	
		634	Colombia	15,020	North	1,550	
		(1 - 64)		(1 40)	Vietnam	(1 28)	
·ła		610	World Tota	1,075,158	Burma	1,259	
		(1.58)		(100.00)		(1.04)	
otal	-	38,720			World Tota	1 120.851	
		(100-00)				(100.00)	

together with these activities accounts for about three-fourths of the world's labour force.

Agriculture as a Varied Activity

Agricultural activity, within its definition, embraces not only arable crops but also livestock, plantations, pastures, horticulture, fish culture, bee-keeping, and forestry. While all these activities have the distinctive traits of agriculture, they have some special features of their own. The contribution of each of them to the national economy also varies in different areas.

Countries, like Denmark, present a model of intensive and diversified farming where practically all farmers grow three or four cereals, three or four types of roots, often two or more grass mixtures, and in a large number of cases some fodder and very often one or more food crops. Almost all of them also keep horses, cattle, pig, and poultry and market dairy products.¹ As against this, most of the countries in South-East Asia or even in Africa carry on little livestock farming. Table 2 will give an idea of the distribution of fiber crops like cotton and jute, groundnut, tea, coffee, and livestock in the major producing areas of the world.

¹Report from the Danish National FAO Committee to the Food Agriculture Organization of the United Nations, 1949, pp. 35-77.

CHAPTER THREE

FACTORS OF PRODUCTION

THIS CHAFTER seeks to analyze the role of the different factors of production in agriculture. Reference is also made to their combination, so as to secure best results. Production is verily the basis of economic activity, for without an efficient system of production, especially in agriculture, the whole economic system is bound to suffer from shortages, high prices, and even a shortfall of production in other industries. Standard of living will fall, if the productive efforts persistently show poor results.

A fisherman goes to the sea, spreads his net and catches fish for sale in the market. A farmer tills the soil, sows the seed, manures the soil and waters and tends the plants and gathers the harvest. He stores the farm produce. He sells the surplus produce in the market. Others buy it for their use or for storing and sale at profit. All these are aids to production. Production consists in changing the form of matter or moving goods from one place to another or holding stocks of goods over a period of time. All goods, except the gifts of nature, come into existence on being produced.

Production is either for direct consumption and satisfaction of human wants or for use as capital goods for further production. Foodgrains, milk, cloth, etc., are consumed, while machinery is used in the production of other goods. Services like transporting, marketing, education, and training or even public service as that of a policeman are all included under "production." Production does not create new matter that is scientifically impossible. It means addition of utility. Turning cotton into yarn and yarn into cloth add form utility to cotton. Bringing maize from the farm to the town adds place utility to it and storing it for use later adds time utility.

The early French economists—physiocrats—were misled into believing that production meant only the "production of surplus value." According to them, agriculture alone yielded surplus value. Bountiful nature usually responds munificently to the efforts of man. Hence only the agriculturists were regarded as "productive"; the rest did only "sterile" work. Adam Smith, however, contributed a new line of thinking on the subject by declaring that production meant the addition of utility.

Production is classified into three categories: (i) primary, (ii) secondary, and (iii) tertiary. Primary production refers to goods produced in close association with nature to meet the basic needs of man, e.g. food. The manufacturing industries constitute secondary production while services fall in the category of tertiary production. Primary productive process may be either extractive or biological in nature. Extractive forms of production include mining, fishing, lumbering, etc. Minerals and fish are materials that exist in nature. Man simply extracts them from mines and collects them from the sea. Biological process covers agriculture, livestock, and forestry. Man helps nature to produce grains, cattle, and trees. Fishing is extractive, but forestry is an example of biological production. This leads us to a deeper probe into production.

Factors of Production

The primary forms of production—whether extractive or biological in nature—are the result of close cooperation between man and nature. In economics, the expressions commonly used for nature and man are "land" and "labour" respectively. Land stands for all the gifts of nature and labour for man's contribution of manual and mental efforts to productive processes. In order to accelerate the rate of production, man uses raw materials, toolc, and implements. The economist refers to all these forms of wealth that are utilized to produce further wealth as capital.

With economic progress, i.e. the growth of markets and money economy and scientific advancement, production from a simple combination of nature and man has become more and more complex and now calls for a greater ability in organizing land, labour, and capital. Due to its growing importance in the modern world, "organization" has earned for itself the status of a "factor of production" distinct from land, labour, and capital, There has been a tendency on the part of some economists to split "organization" into two parts—"organization and enterprise." The function of the organizer is to combine land, labour, and capital in a manner that, through the most productive use of each, the total output of the final product is maximized. In other words, it means an optimum use of each of the factors of production. An entrepreneur, on the other hand, takes upon himself the risks and uncertainties of production. His functions are distinct from those of the organizer and manager. In agriculture such a fine distinction between organizer and entrepreneur is not so sharp as in industries. Generally, the farmer combines in himself the function of an entrepreneur, organizer, capitalist, landlord, and even a labourer. On larger units, the farmer may spend more time on managerial functions but it is only on very large farms that there is a separation between managerial and entrepreneurial functions, usually the same individual shoulders both these responsibilities.

Organization

Physiocrats believed that land was the only productive source; capital and labour were all sterile. Adam Smith, however, realized the distinct role of capital and labour in production. Still he could not visualize fully the part to be played by the entrepreneur or the organizer. This was left to J. B. Say, his French exponent. Smith had held the view that the owner of capital and the organizer of a business enterprise were one and the same individual. Say explained that one might provide the capital as well as initiate the buisness activity, but he believed that the process of distribution could be understood better by separating these two functions. The entrepreneur or the organizer brought together the necessary amounts and types of land, labour, and capital to engage in production; thus he became a distinct factor of production. Organization, therefore, refers to a type of labour, i.e. management and undertaking risks and uncertainties in operating a business.

Capital and Organization

Capital is that part of wealth which is used to further production of goods intended to satisfy future wants. Since the organizer has also accumulated in him some special knowledge and skills that are being utilized over and over again in the productive process, he is, in that sense, *capital*. Loosely speaking, investment in education and training is formation of "human capital." The distinction between the two would thus disappear. "Capital consists in a greater part, of knowledge and organization," according to Marshall.

But, in common parlance, all inanimate goods, like tools, implements, and machinery employed for further production, are known as "capital." Human capital, accumulated as a result of experience, training, and education, on the other hand, is termed as labour "organization."

As discussed above, organization is something superior to capital. This is because knowledge is the most powerful engine of production; it controls nature and forces her to satisfy our wants. The organizer commands labour and also capital. Capital is actually at his beck and call.

Specific and Non-Specific Factors of Production

Following Wiser, the factors of production with common features have been grouped and classified only in two broad categories, specific and non-specific. The perfectly specific factors of production are defined as those which have only a single use and cannot be put to another use. Non-specific factors of production may, on the other hand, be put to a number of uses. Examples are black soil which will grow the best cotton and the ordinary loamy soil on which several crops can be raised.

Another broad distinction is that the non-specific factors of production can claim a payment equal to their marginal productivity while the specific factors are paid on the basis of what the producer can afford. The generally accepted factors of production, i.e. land, labour, capital, and organization, differ in their relative importance in various industries. For example, land occupies an important place in agriculture even in areas where farming has been mechanized. Capital assumes a more predominant role in heavy industries. The role of each of these factors of production is also related to the economic development of a country. Land and labour are predominant in less or underdeveloped economies. Capital and organization assume greater significance in the economically advanced countries.

Combination of Enterprises

It would now be appropriate to examine the problems connected with the combined effect of production factors. It is actually the farmer who performs the function of combining all the factors both as an entreprencur or proprietor of the farm business and as chief executive or farm manager. He is responsible for the general policy as well as the complete administrative control of the farm in every respect. His effort will always be to use these factors of production in a way so as to get the maximum (financial) return from the minimum (financial) outlay. Besides the specific problems like the size of farms, system of land tenure, etc., every farm is confronted with two common problems pertaining to specialization of production and the degree of intensity of production.

Specialized or Diversified Farming

Depending upon the physical factors like soil, the farmer takes economic decisions about the crops to be grown or livestock to be kept. He may decide to specialize in one or more crops or have a diversified farming pattern. Depending upon the conditions of the market and other factors, he may decide to go in for mixed farming. Examples of specialized farming like those of poultry-cum-piggery farms are not many in India. Round about the urban areas, there are examples of vegetable farms which have four, five, or even six vegetable crops successively. There are similar examples of fodder farms or garden colonies. In so far as livestock is concerned, there is a general system of mixed farming of one or the other type. Dairies are generally in the urban areas but without the farms (excepting the military or State ones which have fodder farms attached to them). They are more in the nature of a cottage industry than dairy farming of the Danish or the British type.

Advantages of Specialization

Specialization in agriculture is more or less akin to specialization in manufacturing industry, though with its distinctive characteristics. Some advantages may be enumerated as under. Improved Technical Efficiency. Since the farmer is in a position to concentrate on the production of a single commodity, it becomes easy for the farmer and the scientist to examine the specific problems of that commodity and provide the necessary guidance.

Simplification of Management. After a little experience, the process becomes more or less a routine one and the management procedure is very much simplified. There is no day-to-day problem left and managerial duties become less complicated.

Advantages of Large-Scale Farming. Specialization may help even a small farmer to take advantage of a big farm in the sense of employing specialized labour and equipment.

Better Business Methods. A specialized farmer can take advantage of better marketing and other business facilities.

Exploitation of Specific Soil and Climate Characteristics. If climatic conditions are favourable and homogeneous, a specialized farmer is able to derive the maximum advantage out of the situation.

Advantages of Diversification

Advantages of diversification are connected with the dangers inherent in specialization. Because of the organic character of agriculture, monoculture agriculture is subject to a number of hazards.

Technical Problems. For the replenishment of soil fertility, it is necessary to have a proper crop rotation. Presence of livestock on the farm also helps to restore a soil fertility. Under monoculture or one type of livestock, the danger of losses from attacks by pests and diseases increases appreciably.

Utilization of Byproducts. Diversification provides opportunities for the use of byproducts. Some agricultural by products, like chaff and sugarcane tops, are in the nature of waste material when they are not saleable. In mixed farming, a farmer, by making use of these so-called waste products on the farm itself, increases his income. Diversified farming also gives scope to the farmer to establish some side-lines capable of competing successfully with the commercial specialists.

Dependence on Outside Supplies. If the cultivator can grow on his farm a major portion of his and his family's requirements, he can have a good deal of saving in transportation costs and can have timely supplies without worrying about the market supply and price situation. Carrying green fodder to his livestock is no small problem especially for one who does not grow his own requirements. The farmer can, under the mixed system, expand or contract his production of various products in keeping with changes in their cost-price relationship.

Fuller Utilization of the Various Factors of Production. The full utilization of land, labour, and equipment is possible under the diversified farming system. Naturally, this reduces the cost of production. While a diversified farmer is in a position to lower his unit cost of production by producing several products on his farm, a factory manager may be able to achieve the same result by increasing the production of one commodity alone.

With these advantages of both the systems of farming, in actual practice, the best results are normally achieved by avoiding the extremes. Even this will depend upon the specific conditions of the situation. A completely specialized vegetable farm near a sullage plant (in the close vicinity of the city) may be very profitable. Enterprises can either be competitive, supplementary, or complementary. Competitive crops like rice and jute or cotton and groundnut give scope for specialization. Introduction of some cash crops or legumes in the normal rotation is supplementary in nature. In complementary types one enterprise makes a contribution to the success of the other. In mixed farming, fodder and pasture crops are used as feed for cattle. While deciding the proper course of action, the most intelligent cultivator will try to avoid and eliminate competitive enterprises, and exploit to the fullest extent possible the advantages of supplementary or complementary activities.

Combination of Factors of Production

Having decided upon the type of farming—specialized or diversified—the cultivator is next faced with the problem of finding the best combination of the various factors of production so as to run his farm in the most economical manner. Having decided to produce wheat and milk, for example, on his farm, the farmer has to find out whether it would be profitable for him to resort to intensive or extensive cultivation.

In a country like the U.S.A. where land is in plenty, he may go in for extensive cultivation, while in India or Japan, intensification may be the answer. Similarly, if labour is cheap, he may avoid heavy machinery. Final decisions will, in any case, depend upon the scarcity cr abundance of the various factors of production. With changes in the relative costs of the factors of production, one factor will tend to be substituted for another so as to give the maximum profits to the farmer. The ultimate problem posed is the best utilization of the various factors of production. This is another statement of the Law of Substitution according to which one is supposed to use as few of the expensive and as much of the cheaper factors as possible to obtain the desired product. Rational application of the law of substitution ultimately helps in deciding the proportions of factors and right combination of the factors of production. Depending on cost-benefit relationships, one or more than one agent of production may earn greater prominence. Each factor is substitutable with the other although not perfectly. More use of labour and capital on the same unit of land which is known as intensive system of cultivation means substituting land with labour and capital but land in farming and even in industries cannot be eliminated altogether. Similarly, combining more area of land with less of capital and labour which is known as extensive system of cultivation means substitution of labour and capital with land.

The use of machine instead of human muscles is another example of substitution of capital for labour and vice versa. The answer as to how much of each factor should be combined for most profitable production depends on the relative cost and benefit from each successive unit of each factor which finally is governed by the relative scarcity or abundance of each.

The table overleaf shows how the factors are combined in different proportions in order that the net returns are maximized.

In Case I, when the rent is Rs. 50 per acre, the first unit of labour and capital costing Rs. 100 gives a net income of Rs. 50 per acre after deducting the rent and labour and capital costs. If the second unit is applied on the same unit of land, the additional net income earned is Rs. 40 because no additional rent has to be paid. Therefore, the farmer instead cf renting one more unit of land will follow

Economic	Theory	AS	APPLIED	то	AGRICULTURE
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Rent per unit (acre of land)	Labour and capital unit each worth Rs. 100	Value of produc- tion from each unit of labour and capital	Net contribution from each unit of labour and capi- tal and one unit of land	
	Case I	Rs.	Rs.	
Rs. 50 per unit	First unit	200	50	
F	Second	140	40	
	Case II		5	
Rs. 10 per unit	First unit	160	50	
-	Second unit	120	20	

an intensive system of cultivation to earn the maximum net return. If he applies the second unit on another unit of land he will have to pay additional Rs. 50 as rent and then by investing Rs. 150 he will earn a net income of Rs. 50 or 33 per cent on his investment. But if he applies it on the same unit of land he gets a net income of Rs. 40 from the additional investment of Rs. 100 or a return at the rate of 40 per cent.

In Case II, because the land is cheaper, it pays him to follow the extensive system of cultivation and apply the second unit of labour and capital on another acre of land.

CHAPTER FOUR

NATURAL RESOURCES

OF ALL the productive enterprises, agriculture utilizes the natural resources most—in fact, without natural resources, no agricultural operation would be possible. Imagine these operations without land, sunshine, and water. It needs no reasoning to convince anybody that *land* is the most important of these natural resources—cultivation could not be carried on without *land*.

Definition and Importance

Land, in popular usage, means the earth's surface. In economics, it has been used in a much wider sense. It includes sunshine, rain, wind, and water—in fact, all the free gifts of nature. Marshall defined it as "the material and the forces which nature gives freely for man's aid, in land and water, in air, light and heat." Modern economists, however, regard it as distinct from natural resources, though these may be grouped together. Production which involves major utilization of these natural forces and materials is classified as primary production. Agriculture, livestock keeping, farming of various kinds, hunting and trapping, fisheries and forestry, all these are examples of primary production. Among them agriculture is the most important as it provides food and major raw materials, and this caters to the basic needs of man.

The demand for food and other farm products rises with the growth of population and economic progress. Even a baby has to be fed. Scientific and technical advances lead to new uses of natural products and forces. World's population increased from 923 million in 1800 to 3,286 million in 1964 (Chart I). Projected figures for the year 2,000 show that the Far East alone will have a larger number than the present world total (Chart 2).

The earth is a sphere, 8,000 miles in diametre and 25,000 miles in circumference with about 55 million square miles of land; the rest of its surface being covered with water.

¹ Marshall, Principles of Economics, p. 138.





SOURCE: Monthly Bulletin of Agricultural Economics and Statistics, F.A.O., July-August, 1965.

About 10 million square miles of the land area is occupied by snow and descrts. Half of the remaining area is thinly populated. Hence almost the entire world population depends for its food on 22.5 million square miles of land which is equivalent to 14,400 million acres.

As compared to the other factors of production, the overwhelming importance of land led the earlier school of economists to believe that land was the only source of all wealth. This theory has now been given up. Nonetheless, the importance of land as the main source of materials for most primary needs—manufactures, trade, and transportation—can hardly be over-estimated.²

² Francis A. Walker, Political Economy, 1892, pp. 34-5.


CHART 2: Projected growth of population 1960-2000 by regions

SOURCE : Monthly Bulletin of Agricultural Economics and Statistics, F. A. O., July-August 1965.

Classification of Land

The following are the broad physical classes of land: ³

(1) Agriculture land: (a) humid area—(i) cultivated land, (ii) pastures, (iii) woodlands, (iv) irrigable; (b) arid area—(i) non-irrigable —grazing, dry farming, desert; (c) forest land—(i) forested (ii) cut-over; (d) environment and recreational lands; (e) site purposes—(i) urban, (ii) non-urban; (2) water resources; (i) Usu-fructuary uses—riparian, water power, fishing, navigation, (ii) proprietory uses—irrigation, domestic and urban uses; (3) sub-surface appropriation: (i) minerals, (ii) land beneath water; (4) super-surface uses—aeroplanc, radio, air rights, etc.

According to economic classification based on productivity, land may be classified into the following grades: (i) marginal, (ii) sub-marginal, and (iii) super-marginal.

Marginal land means the land which does not yield any surplus revenue over its cost of cultivation. There is a surplus of revenue in the case of super marginal land. The cost of production is higher than the gross revenue in the case of sub-marginal land.

The land belonging to one economic class may change its class, i.e. from super-marginal to marginal and from marginal to submarginal grades, or vice versa depending on changes in price, cost of production and technical progress in agriculture. With a rise in agricultural price, reduction in the cost of production or introduction of a technical innovation, sub-marginal land would change to marginal or even super-marginal grades.

The grade of marginal land indicates the reserve capacity in respect of land in the country to support increasing population. The poorer the grade of land at the margin, the lesser the reserve in the country has for population. In other words, the marginal land indicates the pressure of population and influences the level of rent in a country.

Characteristics of Land

Like other agents of production, land has important characteristics, some of which are distinctive. While all these may not concern

³ These broad classes were used by Charles R. Van Hise and Loomis Havemeyer in *The Conservation of our Natural Resources* (New York, Macmillan, 1930) and in the NRB Report, us in the study of agricultural economics, the more important ones may be **un**derlined.

Limited Supply. Man cannot create land. Its supply in relation to global surface is almost fixed. An ever-rising demand for agricultural products is accentuating the scarcity of land, which gives rise to a number of economic phenomena, e.g. rent, unearned increments resulting from a rise in the value of land, intensive cultivation, and diminishing returns. It is also responsible for the status with which land has always been associated. Its ownership has been considered to confer a social distinction on the owners, particularly in the pre-industrial sectors. If there were unlimited supplies of land, it would have had no value. Its use cculd be as free as that of air, as even today it is in some parts of Africa. Land there belongs to one who clears it for cultivation.

Its limited area and its importance as an essential factor of production have conferred on it the status of a national asset. The State has to adopt various measures for its protection such as land reclamation, soil conservation, and enactments relevant to its proper management in the national interest. For these reasons, the subject of agrarian relationships and land reforms is receiving increasing attention everywhere. It has been estimated that roughly about 11 per cent of the total land area of the world is capable of being brought under cultivation now, cr in the near future. Professor Fawcett estimated it to be 30 per cent of the total. Hardly 9 per cent of the total is being tilled at present. New technical aids are helping man to conquer nature. Some instances of man's success in bringing more land under cultivation are the realamation of low-lying land in Holland through the world famous Zuyder Zee (embankments along the sea-side) and of the great marsh of the Po in Italy. In India, the construction of Gang Canal in Rajasthan in 1928 and the great Rajasthan Canal, the largest in the world, are turning vast stretches of parched desert land into green fields.

Apart from an increase in the available areas of agricultural land through reclamation, the progress in agricultural sciences is certainly helping man to raise the level of output per unit area of land. The atomic age promises to enhance greatly the human ability to raise production per acre to yet unthought-of heights. A reduction in the growth period of crops makes possible the raising of more crops on the same land in a year. Also improvements in the variety of plants and their capacity to utilize the sun's energy helps produce more food for men and animals per unit area of land. Scientists are hoping to utilize hitherto untapped resources of the sea to produce feed and food.

These developments have led some economists to doubt the validity of the theory of limited supply of land. When Malthus propounded his theory of population, the possibilities of great industrial expansion that were eventually opened up could not be taken into consideration and the subsequent course of economic development earned him the title of an apostle of doom. Similarly, new opportunities placed before man by scientific developments may mitigate the limited character of land in terms of its productivity per unit, but the fact remains that the supply of land in physical terms is limited. Advancements in agriculture provide numerous instances, over large areas, of substitutions of land as a factor of production by other factors, e.g. capital and labour. This trend in modern agriculture has led some to doubt the validity of the Law of Diminishing Returns.

An extreme instance of the non-use of land is the example of hydrophonics, soilless cultivation. Vegetables, flowers, and fruit plants are grown in water solutions containing plant nutrients. This type of cultivation is in the experimental stage. But, by and large, land constitutes the most important factor of production in agriculture. Land will retain its importance because agricultural production is a biological process of an extensive nature, which cannot be confined to the laboratory. But should the wonders of science make it a laboratory process, eliminating land as an active factor of production, it would be such a change that the very difference between agriculture and manufacturing industries would largely disappear and there would hardly be any justification to retain the term "agriculture" except to respect the cld traditional name.

Cost of Production. Land in its natural raw state has no cost of production as it is the free gift of nature. But making it cultivable means heavy costs and investments.

Heterogenity. All land is not of the same quality. There is a great range of variety in soils, subsoils, altitude, configuration, climate etc., in the productivity and suitability of the land for various crops, livestock, poultry, orchards, forestry, pasture, etc. Great progress in science and technology has no doubt considerably extended the scope for raising a variety of crops in places where formerly only a few crops could be grown. However, inherent differences in soil characteristics and climatic factors still determine largely the specialization of various areas and regions, in the world and within individual countries, in different types of farming enterprises.

Immobility in Land Situation Value. The immobility of land makes its supply on a country-basis very uneven. Per capita availability of agricultural land for some of the countries is given in Table 3.

Land is fixed in situation which has an important bearing on land use. The inherent physical properties of soil, i.e. its texture and mineral complex, are not subject to much human manipulation. This means that soil types are almost fixed. The location of agricultural fields in relation to the village site affects to some extent the fertility of land. Land around the village site is considered more accessible, better located and, therefore, productive. It is easier to incorporate village refuse, and farmyard manure in it. Such a difference in soil fertility does not exist in areas where farmers reside on their own farms and there are no marked village sites for their residence.

Soil types and the fixity of situation limit further the supply of land of each grade. Some quality produce is associated with some specific areas as basmati rice in Dehra Dun. In such cases the production of commodities of special grades or quality is greatly restricted. These quality characteristics are usually associated with certain special soil and climatic factors. The location has considerable bearing on farming pattern, availability of supplies, and usage.

Indestructibility of Land. With proper management and care, land can be productively used. Much of the cultivated land in India has been under cultivation for many centuries. But instances are not lacking where through misuse or lack of proper soil conservation measures, vast stretches of land became unfit for cultivation. In the prairies in the U.S.A., heavy mechanized cultivation and large-scale denudation of forests gave rise to great dust bowls. In India, large stretches of land along the Jamuna and the Chambal rivers are badly eroded and have gone out of cultivation

TABLE 3

Country	Agricultural area (million acrs)	Population in 1967 (mllions)	Per capita availability (acres)
1	2	3	4
V1. United States	444.40	199.12	2.2
2. Canada	107.25	20.44	5.2
3. Cuba	4.87	8.03	0\6
4. Brazil	73.54	85.66	0.9
5. Argentina	48.11	23.03	2.1
6. United Kingdom	18.48	55.07	0.3
7. Ireland	2.97	2.90	1.0
8. France	50.76	4 9.89	1.0
9. Belgium	2.25	9.58	0.2
10. Netherland	2.35	12.60	0.2
11. Denmark	6.67	4.84	1.4
12. Sweden	7.81	7.87	10
13. Germany (Western)	20.29	57.70	0.3
14. Germany (Soviet Zone)	12.3	16.00	0.8
15. Poland	38.75	31.94	1.2
16. Czechoslovakia	13.27	14.31	0.9
17. Switzerland	0 99	6.05	0.2
18. Austria	4.18	7.32	0.6
19. Hungary	13.94	10 21	14
20. Spain	50.88	32.14	1.6
21. Italy	37.71	52.33	0.7
22. Yugoslavia	20 44	19 96	1 0
[∨] 23. U.S.S.R.	595.29	235.94	2.5
24. China (Mainland)		720.00	
25. Korea (Rep.)	5.66	29 78	0.2
26. Japan	14.83	99.92	01
27. Turkey	65.19	32 71	2.0
28. Pakistan	68.40	107.26	0.6
∼29. India	401.38	511.12	08
30. Egypt	6.87	30-91	0.2
31. South-West Africa	1,58	0 59	27
32. Australia	91-80	11 75	78
33. New Zealand	2 03	2.73	07

PER CAPITA AVAILABILITY OF AGRICULTURAL LAND IN IMPORTANT COUNTRIES OF THE WORLD

SOURCES : W. S. Woytinsky and E. S. Woytinsky, World Population and Production Trends and Outlook; Demographic Year Book, 1967.

Technical progress, in particular the use of mechanized means for felling trees and ploughing land, has placed immense powers in the hands of man to destroy or conserve the land resources. The prairies in the U.S.A. provide an example of how man, aided with machines, can destory in a few years what earlier generations of men would have taken thousands of years to do.

Selection of Land

An important problem that faces the agriculturist is how to select a good plot of land for cultivation so as to obtain the best results. Certain considerations that weigh in the selection of land are underlined below.

Purpose. The type of land to be selected is largely determined by the purpose for which it is required. In the case of vegetable farming, greater emphasis has to be given to location because of the perishable nature of products. The farms must be situated near the market or a place from where the produce can be transported easily and economically. For a cattle breeding farm, there must be good grazing, abundant supply of fresh water, and shade. But the land should not be costly.

Capital Available. After determining the type of land required for a specific type of farming, the amount of capital available and the farm business return from lands in different locations together determine the selection of land. A specific farm may be very near the city or it may be at some distance from it but may have good transport facilities. The disadvantage of high price for its location near the city should be weighed against the advantage of a lower price but the higher transport cost for its site away from the city. In addition, if the prospective farmer has not enough capital of his own, he has also to calculate the amount of interest which he will have to pay on the borrowed capital. The availability of loans will be another consideration. Inadequate capital or high rate of interest on borrowed capital may change the decision in favour of a site at a distance from the town. If the land is rented. the availability of capital will not be of importance but the level of rent will certainly matter.

Fertility. Physical and chemical analysis of soil, the condition of crops on the land or on similar and nearby land, natural vegetation

and colour of the soil—all these together can help in determining the fertility of soil. Usually, dark colcur is associated with higher fertility. Some weeds are considered as an index of fertility of land. Some weeds do well on poor soils or soils deficient in certain essential nutrients.

Location. Distance from market, transport facilities, and communication need to be examined. In arable farming, land near forest is often subject to depredations by wild animals unless properly fenced, while fencing adds to the investment cost on the farm. In the case of cattle-breeding farms, nearness to a forest may be an advantage in that it may provide cheap grazing. Land near the rivers is exposed to the danger of soil erosion and floods.

Irrigation. In India rainfall is mostly concentrated within 3-4 months of the year; hence irrigation and its source are of great significance to the farmer. With a few exceptions, irrigation by canals is the cheapest method. Irrigation from wells is comparatively more assured, though costlier.

Soil. The type of soil and its depth should be an important consideration in the choice of land. The characteristics of soil can be modified to a certain extent by man but these are largely predetermined by the origin and nature of soil. A medium loamy alluvial soil is generally an all-purpose soil and responds well to better cultivation. The deeper the soil the larger the scope for a variety of farming enterprises and greater the reserve.

Sub-soil. The nature and depth of sub-soil are equally important. If the sub-soil is impervious, the farm may face drainage problems. A good deep sub-soil usually ensures a good fertile soil at the top.

Climate. A healthy climate is needed by both men and animals. Extremes of temperature and very humid or dry conditions greatly restrict the choice of enterprises. A moderate climate is amenable to a variety of enterprises. The amount cf rainfall and its distribution, whether regular or erratic, affects the success of farming in India.

Drainage. In many parts of the country, land is subject to floods or to water-logging during rains. Such land should normally be avoided unless it can be obtained cheaply and improvements in drainage are possible at a relatively lower cost. Topography. In arable farming, especially where irrigation is necessary, a well-levelled surface is to be preferred. Uneven land may be desirable for forests, pastures, and fruit farming. Extremely uneven conditions of land makes it unsuitable for all farm enterprises.

Fragmented or Consolidated. Except where definite advantages are associated with land being in more than one place such as upland and low land for growing different crops or irrigated and unirrigated land, normally a consolidated block of land is to be preferred. It is well-known that most of the evils of Indian agriculture arise from the fragmented nature of plots.

Kind of Tenure. The tenure has an important bearing on the intensive use of land and sharing of its productivity between the landlord and the tenant. A fair relationship should satisfy all three "Fs", i.e. fair rent or land tax, fixity of tenure, and freedom for transfer. The last one is not so important in influencing the economic exploitation of land but as it implies ownership it has a great psychological effect, besides it also enhances the ability to raise loans.

Rent. The level of taxation and incidence of rent should be carefully examined and an area offering other advantages but having a lower incidence of taxation should be preferred.

Labour Supply. Family farming is the predominant feature of Indian farming. Hence the availability of paid labour is not an important consideration for most of the farms. However, where farming is to be done with the help of paid labour, the availability of labour should also be a consideration in choosing a farm.

Manure Supply. In certain locations, e.g. near the towns, manures such as town compost, sewage, and wool waste are available at low cost. This should be considered as an additional advantage.

Good Neighbours. Usually, farming is not a highly individualistic proposition. The farmer often needs the help of his neighbour and, to their mutual advantage, certain operations can be performed in time with the exchange of labour or resources. Besides such economic advantages, good neighbours are a great social asset.

Development of Community Living. An area with better development of education, health, and other community programmes, if other aspects are satisfactory, should have preference over those with less of these facilities.

Land Appraisal

Farm land comprises (i) land in its original natural state, (ii) improvements made on it to bring it under cultivation, and (iii) appurtenances, i.e. building structures and fencing. The current value of farm structures can be found out by allowing depreciation at the normal rate for each item on the basis of their expected useful life. In case there is no record of the expenditure incurred, the evaluation can be done on the basis of current market price less depreciation for the number of years lapsed since the time of their purchase or construction. Any non-tangible improvement such as levelling, involving no masonry work, is usually not taken into account. unless it has involved heavy expenditure. The past value of land may be no guide to its current value if there has been a notable change in the price of land during the intervening period or the old price may not have been representative of the market price. Generally, transactions of land sales are so few and far between that the market price is often not a true index of the economic value of land.

The valuation of land and improvements which do not lend to such costing is done cn the basis of the productivity of land. In regions, where the landlord-tenant system is common, rent is taken as an index of the productivity of land. If the land to be evaluated is owner-cultivated, rent of an adjoining piece of land of similar grade is taken into account. In regions, where rent is non-existent due to abolition of the *zamindari* system or the particular form of agrarian system, the productivity of land can be determined on the basis of the average output and input over a period of five to ten years. Thus the evaluation of land is done on the basis of the average net rent or average net return over a period of 5 to 10 years. The net rent is arrived at by deducting the incidental charges incurred in its collection.

The next step in the evaluation is to determine the rate of interest at which the net rent or net return is to be capitalized. This is fixed in relation to the prevailing rate of interest in the money market for similar safe long-term investments. The value of land worked out as described above denotes its economic price. The market price of land on which an actual transaction takes place may differ from its economic price. The various factors which influence the market price of land are discussed below.

Expectation of Unearned Income. Due tc increasing pressure of population, the demand of land is ever rising while the supply of land is limited. In consequence, the price of land, in general, shows an increase in time. Construction programmes for roads, railways, factories, establishment of townships, and introduction of electricity and irrigation also raise the price of land.

Social Prestige. In ancient communities, social prestige used to be attached to the ownership of land. This was also a factor in raising the price above the economic level. Industrialization, new opportunities in the public services, and social changes have considerably weakened the sense of prestige normally associated with the ownership of property, particularly land. The position of the propertied classes has been largely undermined and the proletariate and professional classes are acquiring new values in social status under the democratic as well as the communistic set-ups.

Source of Permanent Income. Land, if properly cared for, is a source of permanent income. Investment in land is normally considered safe but of long-term nature. Therefore, for determining the price of land, the net return from it is capitalized at a lower rate of interest than warranted by the money market. The market price for land thus determined is higher than its economic price.

Lack of Alternative Source of Livelihood. In the peculiar circumstances of economic development in India, more than two-thirds of its population are dependent on farming. No other occupation can absorb any significant portion of the agricultural population. This gives great value to land-holding in this country. Land holding is considered more a source of livelihood than business or investment. As such, the land prices remain high.

Location. The price of land is raised out of all proportion in certain cases as, for example, when the land being sold is contiguous to the fields of an adjoining holder interested in enlarging his holding.

Intensity of Demand, Purchasing Power, and Higher Standard of Cultivation. Even when two pieces of land situated in two different regions are equal in productivity, the one situated in regions where competition for land is keener will command a higher price. A larger purchasing power and a higher standard of farming are also conducive to a higher land price. A decline in land value may be due either to temporary causes or to more permanent economic and social factors.

Agricultural Prices. A fall in agricultural prices reduces the income from the land and therefore its value.

Natural Scourges. Certain regions or areas may be subject to annual floods, bad drainge, or insect infestation. In such cases, the element of high risk reduces the value of land.

Agrarian Legislation. With a view to grant legislative protection to the actual tillers, restrictions are being placed more and more on the ownership rights in respect of ejection, increase of rent, and resumption of land. These restrictions affect the price of land adversely. In Uttar Pradesh, the Zamindari Abolition and Land Reforms Act, 1952 bans letting out of land. This limits the scope of investment in land for the purpose of carning a rental income from it.

Heavy Taxation of Landed Property. A heavy taxation reduces correspondingly the income earned from land either as rent or in the form of net return from self cultivation. The net return for figuring out the capitalized value of land is also reduced accordingly. In U.P., a large holding tax has been levied to discourage large holdings.

Rural Exodus. In some countries where an unprecedented industrial development has led to rural exodus on a large scale, there has been a steep fall in the price of land for the time being.

Excessive Fragmentation of Holdings. The greater the land fragmented, the higher is its cost of cultivation. Fragmentation also makes improvement difficult. In such cases, the price of land is lower as compared with land in one or a few big parcels.

Special factors enhancing hardships in farming or raising the cost of cultivation in regions where climate is not good, affect the price of land. In many parts of India, land went out of cultivation due to heavy incidence of malaria or constant damage by floods. The labour supply became scarce. The price of land went down. The problem of labour is not so unmanageable now as it was before the introduction of tractors. However, unhealthy climate affects the value of land considerably. Labour scarcity and high wages which increase the cost of cultivation without offering any advantage, such as nearness to market, also depress the price of land. In the case of technical and technological innovations or on the introduction of highly profitable crops, the value of land rises.

Development of Investment Alternatives in Securities. If a country offers alternative opportunities of investment to yield a high rate of interest, the value of land declines but this is more applicable to those countries where land is more a source of income rather than a means of livelihood:

Permanent Drop in Income. If there is a drop in income in general for a long duration, as happened during depression in the thirties, the price of land is also affected. Similarly, in the case of a rise in incomes of durable nature as during the post-war period and at present, the price of land goes up.

While the central point for calculating the value of land is the average net return obtained from it, the actual value of land is largely influenced by considerations stated above.

Land Systems

Agriculture has been organized in various countries on different patterns depending upon the economic, social, and political set-up and the economic system of a country has also influenced the agricultural organization in it. For purposes of simplicity, various economic systems can be conveniently grouped under three broad heads as follows.⁴

Private Enterprises. Individual firms and households carrying on economic and related activities come under this category. The key idea of this mode of functioning is "let the individual do it." Under the free enterprise economy, the predominating land system are peasant and landlord tenant systems.

Public Enterprises. The loose popular term for this is "state socialism," i.e. the government organizing and directing economic activities.

Co-operative or Group Enterprises. The key idea of this mode of functioning is "let the association do it," i.e. individuals organized into groups or associations for carrying on economic and related activities. However, it is still the free enterprise economy, the association or group does not alter the nature of the economy from what is described as the "private way" above.

⁴ Black, Introduction to Economics of Agriculture, p. 31.

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None of these three types may be found in its purest form anywhere. The major factor determining the economic system is the political set-up and the professions of the government in power. Even history, tradition, and customs are subdued. The USSR and China are examples of this type.

CHAPTER FIVE

LABOUR : THE HUMAN BASIS

LABOUR MAY be defined as the physical and mental human effort directed towards economic activity or creation of utility. During the hunting stage, men satisfied their wants through the bounties of nature, just by living on wild fruits and animals. Labour had not the same importance as a factor of production as today. During the pastoral stage, it acquired the status of the second important factor of production. Taming cattle, training them, their feeding and upkeep ; all these are examples of labour the economic sense. This pastoral stage was followed by in the agricultural stage when man instead of skimming the surface of the land, started ploughing into the depths of the soil and bringing up the productive energies that lay hidden far below the roots of grass. In the early stages of agricultural development, capital was little used, and most of the production was achieved mainly with human labour.

Classification of Labour

Labour can be classified into broad divisions as follows: (a) Manual-(i) skilled, and (ii) unskilled. By skilled labour is meant specialized labour for a definite occupation such as that of a farm mechanic. Unskilled labour is the ordinary cheap labour which is employed in manual work not requiring any special skill. (b) Intellectual-(i) the type of labour in the performance of which mental exertion predominates as compared with the movement of muscles, for example, the labour involved in the work of doctors, teachers and scientists; (ii) labour of direction or supervision. With the growing complexities of economic organization, the importance of this type grew to the extent of earning for it the status of an additional factor of production, namely, organization.

In economics, labour directed to creation of utilities, or in other words towards economic activity, is called productive. That labour which is just for recreation or has no element of economic activity is called unproductive. A football team consisting of professional members, who play to earn an income from the sale of tickets to spectators of the game, is engaged productively, but a team of school children doing their daily practices of football with no motive for any direct income would not be considered to be engaged in productive work in the economic sense.

Another way of classification of labour in agriculture is on the basis of the terms of contract and period of employment as follows: (a) temporary--(i) daily or casual, (ii) weekly; (b) permanent---(i) seasonal, (ii) annual.

Temporary labour is employed during the peak season when the farmer is not able to cope with the operations on the farm with his family labour resources. The need for permanent labour to do the regular farm work arises because the farmer's own labour resource may be very limited, or the scale of operation is large and cannot be attended to by the labour force usually available in an average-sized family.

Sometimes labour can be classified according to the special nature of the jobs undertaken on the farm, e.g. ploughman, cattleman, poultry man, watchman, carpenter, and farm clerk.

Factors Governing Supply

The absolute supply of labour is dependent on the population trends in the country, especially in the rural areas. Though the optimum theory of population finds greater acceptance, it would be safe to say that the Malthusian Theory of Population is more applicable to the rural demographic structure than the optimum theory and this holds good with greater force in the underdeveloped countries. The total supply of labour available to farming depends upon the total numbers resident in villages, i.e. rural-urban ratio. In farming, the relative supply of labour is determined by the following factors, especially in India.

Density of Rural Population. The thickly populated parts such as Eastern U.P., Bihar, Bengal, and Kerala have a large labour force available for farm work as compared with Rajasthan, parts of the Punjab and U.P. which have a lower density of population.

Health and Physique. The supply of labour force is not dependent

merely on the number of workers, but their health, physical development and efficiency in work also influence considerably the total supply of labour. The output of labour by a person with good physique, sound health, good training, and ability will certainly (other things being equal) be higher than that of a worker whose body development, health, etc., are not so good.

Labour and Wage. Usually the returns in farming are low, hence the wages paid to labour are lower compared with industrial wages or wages paid in construction work. In areas where alternative sources of employment exist, the supply in agriculture is considerably reduced. The demand for labour is also irregular in agriculture.

Personal Preferences of Labour. In some occupations the work is not pleasant. It may be hard and even perilous. In agriculture also, hard muscular work is required. If the alternative job is of an easier nature, the worker would be attracted to that, but generally most of the farmers prefer to stay in agriculture.

Security. If one job offers more regular employment than the other, the worker will have the preference for the former. Agriculture does not compare favourably with other occupations in this respect, because the nature of employment is irregular.

Mobility. If the workers in a region or in the country as a whole have greater mobility to seek profitable employment outside their village, and in case employment opportunities exist outside the village, the labour supply in the village will be affected accordingly.

In India, especially for lack of alternative employment opportunities and mobility, the villages in most regions are overcrowded in the matter of labour force in relation to effective demand for it although, even in many such places, a disproportionate rise in demand during the peak agricultural seasons causes a temporary scarcity of labour.

Demand for Labour

The demand for labour depends upon a number of factors.

Nature of Farming. The demand for labour is not directly related to the size of the farm. With the same type of farming, a small farm may need more labour per unit of the area. It is the intensity of cultivation as well as the size of the farm which determine the demand for labour.

Crops Sown. Labour requirements will differ with the nature of crops sown. The labour requirement in garden farming and vegetable cultivation would be different from those in the cultivation of corn.

Method of Cultivation. The crops remaining the same, method of cultivation also affects the requirements of labour, e.g. requirements of labour in the broadcast and transplanted paddy are different.

Similarly, in the case of livestock, the system of management and the type of livestock will make all the difference. A Hosier system of outdoor mechanical milking may need the services of one or two men only for a herd of 60 cows. Indoor hand milking may call for the same labour force for a herd only one-fourth that size. Again, one man may handle a herd of 80 cattle on a pasture, but hardly a fourth of that with indoor feeding.

Use of Machinery. But sometimes mere skilled labour may be required to man specialized and intricate machinery.

Organizational and Supervisory Capacity of the Manager. The supervisory staff may or may not be able to handle large numbers of labourers. In case they can efficiently manage, they may expand the farm business (other things remaining equal) and have more labourers. But if their own capacity to supervise is limited, this step cannot be taken. Same can be said about farm organization -certain organizations admit of more manpower being engaged, while others would find that surplus.

Efficiency of Labour. This is quite an important factor though often forgotten. Efficient labour need not be engaged in large numbers -a handful of efficient personnel would perform as much work as a group of inefficient labourers.

Seasonal Fluctuations in Demand. In agricultural work, demand for labour grows out of all proportions in the peak periods of agricultural operations like harvesting. When crops are ready, it is harmful to let them stand in the field and everyone is anxious to harvest his crop first. There is a temporary scarcity of labour at that time. As care of animals is more or less a continuous duty, the variation in demand for labour is not so marked in the case of livestock farming.

Division of Labour

Even on a small family farm employing no outside labourer, each member of the family has definite farm tasks. The father and son may carry out most of the farm operations; the farmer's wife takes food for them to the farm, helps them in light farm work, e.g. sowing, weeding, and harvesting; the juniors may tend the cattle. On larger farms, further specialization in the duties of each may be necessary, e.g. one whole-time man to look after the cattle, and a watchman whose sole duty is to protect the crops from theft and damage by wild animals. Such specialization of work is known as division of labour. It increases total productivity as it is a better system than everybody doing everything. Division of labour may be defined as the assignment of different tasks to various individuals according to their capacity and aptitudes.

Forms of Division of Labour

Division of Jobs. Each man, instead of being his own blacksmith, carpenter, barber, tailor, doctor, etc., devotes himself entirely to one or the other of the various occupations. For example, in agriculture somebody is a farmer, the other is a labourer, and still other a landlord.

Divisions of Processes with a Job. A further stage in the division of labour is for each employment to be split up into a number of processes. In his famous description of the industry of pin-making, Adam Smith describes how one man draws out the wire, another straightens it, a third cuts it, a fourth points it, and the fifth grinds it at the top for producing the head. The result of such a specialization is that the same number of workmen can in a given time turn out a vastly increased quantity of the product. But the essential condition for such a division of labour is that the making or manufacturing process should be capable of division into distinct separate stages offering continuous employment. In agriculture, farming may be divided into specialized processes, as winnowing, harrowing, and threshing, etc. Division of labour has many advantages. Firstly, a man is engaged constantly in one kind of work. His ability to do the work increases because practice makes him perfect. He develops dexterity. If there is no division of labour, a man has to

do different kinds of work and has less opportunities for getting skilled in any one of them.

Secondly, it is possible to give each worker work jobs suited to his physical strength, and intelligence, education and aptitute and thus get the best out of him.

Thirdly, there is a gain or saving in time. Distraction of thought involved in passing from one place and job to another is avoided. (a) Division of labour shortens the period of apprenticeship. (b) Time of workers is not lost in shifting from one process to another.

Fourthly, fewer tools and implements are required and each implement is utilized to a larger extent.

Fifthly, division of labour promotes invention by breaking a complex process into simple ones and making them more mechanical. Continuously going through the same set of movements, in particular simplified tasks, gives a greater opportunity for detailed observation and finding cut a better way of doing the work.

Sixthly, it ensures better wages to the labour as his efficiency increases.

Sevenly, it benefits the consumers as the cost of production goes down.

Eightly, it allows women and children as well as men who are suffering from some partial disability to find a place in the industrial order where they can labour to advantage.

There are also some disadvantages in the division of labour.

Firstly, the workman is often reduced to the level of a machine. A person whose whole life is spent in performing a few simple operations has no occasion to exert his understanding. He becomes dull and stupid. Adam Smith favoured State interference in such a situation and suggested education as a remedy. There is reason to believe that the person loses interest in work which is of a routine nature. He just feels driven to work.

Secondly, in the process of division of labour, the work is simplified. This leads to partial displacement of men by women and children. Coupled with the extreme dependence of an individual workman upon a certain specialized piece of work, it also increases the danger of unemployment in case the demand for that kind of labour ceases due to a change in the process or stoppage in the demand for the product of that labour. Thirdly, the system of division of labour may be abused by capitalists and other employers for the exploitation of labour; it has sometimes serious disadvantages relating to a degradation of the labourers to the level of a machine to the exploitation of women and children, and eventual unemployment. It has, however, to be understood that the system is for the man and not the man for the system. It should be so used as to secure the maximum welfare.

Fourthly, the division of labour is not possible to the same extent on a small farm as on a big one because there is not enough work of each type on which one man may be wholly kept busy. Its application is then limited by the unit of production as well as by the nature of production. Agriculture is not susceptible to so great a division of occupation as many branches of manufactures, because its different occupations cannot possibly be performed simultaneously. One man cannot always be ploughing, another sowing, and the third reaping. A person who practises only one agricultural operation, may be idle for eleven months in a year. To secure the greatest economy from division of labour, each labourer must be engaged continuously in a nærrow range of work.

Combination of Labour

This refers to employment of the right number of labourers of different kinds in such proportions that they are just sufficient to carry out the operation without any loss in the output of work in a given time. The right combination of labour on the part of the farm manager requires a clear and complete knowledge of various operations, i.e. how best to do them, what number of men can do these, in what combination to get these done and the time required to complete the same. For example, in arranging planting of sugarcane, the manager should know what area can be covered by a pair of bullocks in one day in making furrows, how much seed is needed for planting the area, what number of men can cut the sets for seed so that the men actually planting the sets have not to stop work for shortage of sets. He should also arrange for the right number of labourers to carry the seeds to the fields, the number of men to plant them and to cover them. In and operation like this requiring team work, unless the team has its full complement, the output suffers. An efficient manager who has the requisite experience and knowledge should arrange, in advance, for the number of labourers to come on the day of planting.

Efficiency of Labour

Efficiency refers to the ratio between the input and the output. In the case of physical efficiency, the input refers to hours of work, and the output is the quantity of work done during that time. In economic terms, it is the ratio between the value of input, in this case the wages of labour and the value of the output. The efficiency of labour will be high or low in terms of its cost to the value of work done. If a labourer does a certain amount of work and is paid a rupee for it, while another labourer does twice as much work and is paid one and a half rupees, the second is decidedly more efficient and hence cheaper than the first because the quantity of his work is greater in relation to his cost. But if the second labourcr were to be paid two rupees, he need not be preferred to the former; the quality of work done being similar in both cases. If a labourer does the same kind of work in one hour which another takes longer than one hour to finish, the physical efficiency of the first is higher than that of the other. The highest paid labourer is usually the cheapest because although he gets higher wages, his output is relatively larger than the difference in wages as compared with a less efficient and a low paid worker.

Drawbacks of Inefficient Labour

Since wages of labour are a significant item in the total farm cost, especially in non-mechanized agriculture, the quality of labour employed makes a good deal of difference in the management efficiency of the farm. The drawbacks of the poor grade labour are : (i) It needs more supervision, which means that a manager can supervise a smaller number of labourers. This limits the size of enterprise and increases the cost of supervisory labour. (ii) The output of work is less despite supervision. (iii) The output of other stocks and equipment, e.g. animals and implements is diminished. (iv) The quality of work is also poor.

Factors Affecting Efficiency of Labour

These may be grouped under four main divisions—physical, intellectual, moral, and organizational.

Physical. Physical factors are those which relate to the external environment and often beyond the control of the employee, though an effort may be made to influence and modify these. These can be sub-divided further into five broad heads as follows:

(1) *Heredity*. Hereditary endowment varies greatly not only as between individuals of the same community but as between communities, races, and nations. Descendants of agricultural races are supposed to be more efficient in carrying out agricultural operations. A Jat, for example, is a better cultivator than a Rajput who is a better fighter. But by training and experience, one can be as efficient as those who acquire such skill as a community or racial trait.

(2) *Climate*. Extreme heat and cold such as we experience in parts of India are not favourable to efficiency. The highest efficiency is found in regions with a temperate climate and it is the lowest where the climate is hot and humid. This is true of human as well as animal labour.

(3) Food and other Necessaries. In order to maintain proper health, it is very necessary that the labourer should be provided with good food—sufficient in quantity and of the proper quality clothing and housing which are the bare and the primary needs of life. The human stomach bears much the same relations to the whole frame as the furnace to the steam engine. With the correct type of fuel, the engine will do work well. With adequate food, the man will perform well.

(4) Sanitary Conditions. The surroundings in which labourers are required to work should be as healthy and pleasant as possible. This point is, however, not so very important in the case of agriculture as in an industry where insanitary conditions and congestion have to be avoided through planning at the construction stage of the factory.

(5) *Health*. If a man is not healthy, he can hardly be expected to exert himself fully. Malaria and other infectious diseases greatly

affect the efficiency of the labourer. His earning capacity is affected adversely. This in turn depresses his standard of living which is already low. Thus a vicious circle is formed.

Intellectual. Intelligence is a powerful factor in the efficient performance of one's duty. Here the reference is not to technical knowledge, but to clearness of mind, quickness of apprehension, strength of memory, and the power of consecutive thought. The factors influencing the intellectual development can be grouped under the following three heads:

(1) Home and Mother. From the time the child is born till hc grows into a boy and enters life, the influence of the mother constantly remains over him. This is the first school where the child receives his initial education. In this respect, the situation in India can improve only with widespread education among girls, who are future mothers, and through intensive extension work in home economics.

(2) *Education*. Education is necessary to bring out the best in man, this fact is too obvious to need any exposition.

(3) *Travel.* A man's outlook remains essentially narrow if he remains wedded to the place where he is born.

The advantages from intellectual development may be summed up as follows: (a) The period of apprenticeship is shortened. (b) The necessity of supervision is minimized. The labourer is able to carry instructions in his mind, and to apply them with discretion to the varying conditions of his work. (c) Less wastage of material takes place. This is more important where the material used costs more than the wages paid. A very little difference in the degree of thoughtfulness, foresight, and regard for instructions on the part of the labourer in such cases may make a great difference in the net product. (d) Difficult operations of machinery are learnt quickly and readily. Brains are not required only for the invention of machines. They are wanted for their adjustment, ordinary use and maintenance. This is becoming more important with increasing mechanization in agriculture. (e) The workman becomes skilful.

Moral. This relates to all those factors which affect the will, i.e.

honesty, work habit, ability to work in time, ability to co-operate with co-workers, faithfulness to the interests of the farm, patience and contentment, and above all cheerfulness and hopefulness. These qualities can develop only through proper education and fair treatment of the labour force by the employer. According to Marshall, hopefulness, freedom, and change are the three closely allied conditions of vigour. An apt example is that of slave labour. Such labour has always and everywhere been found inferior to the free labour. The lash fails to command the faculties which instantly spring into activity under the inspiration of an ample award. Fear is far less potent than hope in evoking the energies of mind or body. Efforts made under the motivation of fear are far more exhausting than those made under the influence of hope for reward.

Organizational. After recruiting an efficient labour force, it depends greatly on the farmer or the manager's own organizational ability to put it to efficient use. The quality of the labour supply of any country is one of the deciding factors governing the quality of its agriculture. The popular notion that the farm work does not need any skill is erroneous.

In order to obtain maximum efficiency, labour should be productively employed. In other industries, comparatively little labour is employed in unproductive work. In farming, the nature of work is such that it is generally impossible to avoid a considerable amount of unproductive labour. It should be eliminated as far as possible. The farm manager should aim at an even distribution of labour demand. Mixed and diversified farming and wellplanned crop rotations are more helpful than the specialized types of farming in making the demand more even during the year.

The manager should employ the best quality labour in the most profitable direction. He should ensure that farm operations are completed in time. In order to ensure economy in labour, the supply should be just sufficient so that conscious effort is required to get the work done within time. A person usually slows down to make the time fit the job if he finds that the time is ample for completing the task leisurely.

A labour distribution sheet should be prepared every evening allocating the following day's work for a labourer on the farm. It will avoid confusion as well as loss of time which might other-

wise be the case if the work is allotted on the spur of the moment in the morning. Piece-work, in certain operations, lightens the manager's task. Fairness in payment in the case of piece-work is very essential so as to ensure good quality of output. One method of making the labourer more interested and getting more output from him is to allot tasks for the day. When the task is complete, the labourer should be free to stop work and go home even before time. The tasks must be fairly allotted so that each labourer working sincerely earns rest as the reward of his industriousness. If the task is too big nothing is gained, if it is too small it results, in slowness of operation. A good knowledge of the capacity of labour is, therefore, necessary for allotting the right amount of work tasks. The system requires careful supervision also. The proper care of animals used in the allotted type of tasks needs watching.

The measuring and marking of the task required managerial ability. Once done well, it reduces the need for supervision to maintain the rate of performance. By an increase in efficiency and supervision, it is often possible to double the daily output of labour in agriculture.

Crops and other enterprises on the farm should not be competitive in their labour requirements as far as possible. Various operational processes should be simplified. For example, the total area planted would be larger if one man digs and another man plants the seedlings as against the same person doing both the jobs.

If the labour is of a superior grade, the equipment which is used should also be superior. A bad worker can injure a good team of draught cattle or a machine, similarly cattle and machines of poor quality delay the work and reduce the efficiency of a good worker.

The farm should adopt all possible economical and improved practices and innovations as these help in reducing costs and increasing the production on the farm. Improved seeds and chemical fertilizers increase the yield per acre. Progeny testing and balanced feeding similarly increase the yield of milk per cow.

A labourer to be efficient must be both satisfied and well-fed. A poorly fed labourer cannot be expected to work long hours without getting tired. Raising the standard of living as a means of increasing the efficiency of production is of particular importance in backward countries where population tends to press on the soil. Again, efficient and willing work cannot be expected from labourers retained by keeping them in debt. The labourer should feel as

retained by keeping them in debt. The labourer should feel as a free man. Only if his normal requirements are met, one can insist on the proper performance of his duties. Like all other human beings, he is least amenable to being subjected to face but he can be led successfully and easily with a fair treatment and fair wages. The best results are obtained by flexible firmness, just treatment, and strict discipline. The supply of some land to the labourer for his personal cultivation makes him interested in staying on the farm which is to the advantage of the farmer in ensuring the regular labour supply and sincere work.

Selection of Labour

In selecting farm labour, the major criterion should be efficiency. In general, it is desirable to select a trained man for skilled operations. But if such a man is inefficient physically, intellectually, or morally, he should be disqualified. It may happen and in practice often an unskilled man is preferable to a skilled labourer because of his high degree of physical, moral, or intellectual development. Such a man quickly picks up any assignment that is entrusted to him even though it requires trained skill. The points to be noted in selecting labour are as follows.

(1) *Health and Strength.* Most farm work requires muscular strength. It has to be done at the opportune time. The timing of farm operations is dependent on nature. The farmer cannot drop out for a day or a week and come back to continue the work from where he left it.

(2) Skill in the Variety of Farm Tasks. An agricultural worker should normally be able to perform several types of jobs which on a farm are mostly interrelated.

(3) The workman should be capable of making suggestions which may improve the quality of work he is doing.

(4) The Work Habit. It is the idle class who are always pulling back, setting a low pace for the team, and stirring up discontent. There is no place for a man who does not enjoy working on the farm.

(5) *Time Sense*. In agriculture this is important as every thing sowing, cultivation, harvesting, etc., is fixed and fitted in a sequence.

(6) Faithfulness to the Interest of the Farm. This requires that the workman should put the success of the farm, i.e. doing his work well and at the right time, above his own personal comfort and entertainment. He should prove to be a willing worker with a sense of responsibility.

(7) Honesty is the Prime Requisite. The only safe and sane way for the workman is to report his mistakes and accidents. A mistake reported may be adjusted and forgotten. But a hidden mistake grows into a larger difficulty, engenders distrust and ultimately the discharge of the employee. Secondly, farm work is spread over a large area and it is not, therefore, possible to have effective watch on each and every operation. The worker should possess high character and a sense of responsibility.

(8) Patience is another quality which adds to the value of the worker on a farm, especially in dealing with work animals.

(9) The worker should not be in the habit of using liquor and intoxicants. This has damaging effects on one's mental and physical capabilities.

(10) Skilled labour is more costly than unskilled and requires good care in selection. The effect of inefficiency in skilled labour on output is much more marked since such labour is generally in charge of the more costly equipment or processes in the business. A farm mechanic by inefficiency or neglect may cause the stoppage of an electric engine. The stoppage of the engine when fields are to be irrigated or sugarcane is to be crushed may entail a heavy loss of money and wastage of unskilled labour employed on the farm. Unskilled labour is generally employed in large numbers often for team work. The inefficiency of one need not necessarily cause a financial loss if the supervision is able to detect such inefficiency in time. Sometimes the other members of the team may make up for deficiencies in one of them. However, if the supervision is slack, the danger is that the laziest man may set the pace of the team.

The character of the labour is very important. He has got to be obedient, disciplined, and well-behaved. In selecting and supervising labour, due consideration must be given to the force of character in addition to the qualities mentioned above.

Requisite Qualifications of the Manager

The managerial functions may be divided into three types:

(1) Decisions on organization and economic operation, e.g. the choice of types of farm with respect to location and size, the choice of types of farming with respect to crops to grow and livestock to keep, the size of each enterprise, the level of intensiveness in cultivation, etc. (2) Supervision and programme planning. Projecting the programme of the day and meeting of emergencies as they arise require alertness of mind if labour is to be directed to secure the best results. (3) Buying and selling.

Since most farms are small, the farmer has to operate both as manager and labourer and he must perform all these functions himself. It is evident that farming is a business requiring men of many qualities.

The manager should be well-up in farm work. Only then he is in a position to direct others. He should have a clear idea of what is to be done and should have the ability to arrange the work in such a manner as to get the maximum of result with a given outlay. A clear mental picture of the work to be done and how it may best be done are essential for efficient management. Without this vision, a manager is a blind leader. A good judgement in deciding what to do at a given time and what to leave undone requires the knowledge of farming as well as the experience in farming. A knowledge of crops, livestock, and machinery is essential for intelligent management. The economic principles underlying the choice and combination of enterprises, minimization of costs and maximization of returns, and economics in buying and selling must be well understood by an efficient manager.

Ability to give and receive instruction and explanation relating to work is very important. Self-control is one of the essential qualifications of the farm manager. He who cannot control himself will have little success in controlling others. Emotion should not lead a man to lose control of himself and let rational judgement have supremacy over the spirit of revenge. Ability to control men requires an understanding of human nature. There should be fairness in treatment. The manager must be of amicable nature and friendly with neighbours. Ability to co-operate with neighbours is necessary, specially in operations such as threshing and harvesting which often need outside help to be completed in time. The requisite abilities of a farm manager may be summed up as follows : (1) knowledge of crops, livestock, and machinery; (2) knowledge of economic principles of management; (3) good judgement; (4) good administrative ability— (i) ability to give and receive instructions, (ii) self-control, judgment, and patient hearing, (iii) knowledge of human nature, (iv) fair treatment of employees, (v) amicable nature, and (vi) strict discipline.

Training of Labour and Farm Work

Farm work is taken to require little training. This is a mistaken belief. Modern farming has grown complicated due to the increasing application of science and technology to it; hence farm hands in order to be efficient must be trained.

The first step in training labour is to allot simple and light duties in the particular job for which the labourer has been employed. The next step, namely, the allotting of more difficult work in the same job must never be taken until the labourer is proficient in the first.

Need for Close Supervision

The farm manager must first understand the capability of his labourers individually. He must note down in a book kept for the purpose the points of defects as well as of ability of each man. Having divided the work of the farm among his men according to their suitability, his next move should be to tackle the obvious defects in his labour which decrease efficiency. In doing so great care must be taken to avoid overzealous treatment which often spoils the entire programme.

If the supervision is not strict, the labourers get into the habit of coming late. Some labourers get into the habit of slipping off from the work on some excuse. By doing so they disturb the team work and the other labourers working with them have to stop work. Close supervision would remove this bad habit.

LABOUR: THE HUMAN BASIS

Some Shortcomings

Many a third-grade labourer may be punctual while the brilliant ones may be unpunctual. This bad habit can be cured by warning, fine, and in extreme cases by dismissal. It must be remembered that the object of any punishment whether minor or major must never be in the nature of a revenge in which bitterness comes in. Punishment is a necessary weapon, the sole object of which is to prevent the recurrence of the offence. The extreme case of dismissal is to act as a deterrent for the rest of the staff. In all cases, it is desirable to give two or three warnings, and punishment must be noted by the farm manager in the same register. If the farm manager desires a high degree of efficiency in his labourers he must treat them as efficient and good men and not as worthless men.

It is often found that a labourer works hard and well for a short time and then slackens off. This is generally due to both physical and mental weakness. The proper remedy is to change the work two or three times in a day.

In conclusion, it may be pointed out that the problems of agricultural labour are diverse and complicated. In the first instance, they are entirely different from those of the industrial sector. Secondly, the largest part of labour in a village is devoted to agricultural Thirdly, from agricultural work there is derived pursuits. a certain amount of satisfaction, as it is creative, much more so than factory chores. Fourthly, there are disparities between the different types of agricultural works and these disparities cannot be removed for no standardization of agricultural assignments is possible. Fifthly, the scope of scientific labour management is limited in agriculture for the same reason. Sixthly, urbanization or industrialization in the village need not always improve the lot of agricultural labour. Lastly, conditions of work in rural areas can only improve with a growing consciousness among labourers themselves. It is, therefore, not possible to apply blindly the principles of labour economics to agricultural labour.

CHAPTER SIX

PRESSURE OF POPULATION

THE SUBJECT has been discussed innumerable times by experts and demographers. The pressure of population is due to two factors operating especially in agriculture. This phenomenon is particularly noticed in underdeveloped countries. The two factors responsible for this pressure are laws of diminishing returns and those of population. The laws of diminishing returns are a well-known phenomena and work to bring down the productivity of land over time. The laws of population are responsible for explaining the increase of population over a period. The result is that diminished productivity coupled with increasing human population bring about a greater pressure on land, which is unable to support more people than the optimum.

The Laws of Diminishing Returns

Marshall was responsible for enunciating these laws in clear terms. The essence is that increasing inputs of any factor of production, after a certain point, tend to produce diminishing returns. This doctrine establishes input and output relations in terms of physical produce. There is what is known as the economic intensity of land. When this point is reached, equilibrium in respect of production is established. When production is pushed beyond this point, the equilibrium is disturbed and a further increase in production does come about but at a diminished rate. The optimum in respect of a factor of production is known to every farmer through his experience.

An examination of the data in Table 4 would indicate that both the average physical productivity and the marginal physical productivity rise at first, reach a maximum, and then fall as the quantity of labour applied to a fixed quantity of land is increased. This represents an important principle, described as the "law of diminishing returns."

TABLE 4

Quantity of labour applied to 8 hectares of land (men)	Total product (tonnes)	Average physical productivity (tonnes per man)	Marginal productivity (tonnes per man-)
0	0	······ ·	8
1	8	8.0	16
2	24	12.0	10
3	34	11.3	6
4	40	10 0	2
5	42	84	2
6	44	7.3	2
7	46	6.6	2
8	48	60	1
9	49	5.4	

PRODUCTIVITY SCHEDULES

As we increase the quantity of any one input which is combined with a fixed quantity of the other inputs, the marginal physical productivity of the variable input must eventually decline. It must be clearly understood that when we say "increase" the quantity of one input we mean in different experiments. To find the effect of fourth man working with 8 acres, we must not start working with 3 men and then add a fourth when the process is halfway through. We must take first 8 hectares and 3 men and see how much wheat we get. Then in a separate experiment we must take 8 hectares and 4 men and observe the difference. This difference in the output is the marginal physical product of the fourth man. In this sense, then, the first man put to the 8 hectares gives us 8 tonnes, the third an additional 10, the fourth an additional 6, the fifth an additional 2 tonnes, and so on. The more labour added to our 8 hectares, the more of wheat we get.

But the output of wheat does not increase in proportion to the quantity of labour used. It rises at a decreasing rate. If we increase the number of men to a large enough number, we shall find that eventually the addition of more labour does not enable us to get any more wheat. The land has reached the physical limits of its productive capacity, and the marginal physical productivity of labour is then zero. If we add still more men they may get in each other's way and trample down the plants, and an extra man may actually reduce production.

This is a general law applying to any factor of production or in-It is perhaps easier to visualize a varying number put whatsoever. of men being applied to a fixed quantity of land. The law applies, however, if a fixed number of men are spread out over varying quantities of land. Suppose that we have only 5 labour units to work with, but that we can spread them over as much or as little land as we like. By conducting a series of experiments we might, then be able to construct a table such as Table 5 which would show how much product could be produced by 5 "men" on varying quantities.

TABLE	5
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Number of hectares to which 5 men are applied	Total product (tonnes)	Average physical productivit of land (tonnes pe hectare)	Marginal physical y productivity of land r (tonnes per hectarc)			
0	0	2	7.0			
1	7	7.0	0 8.0			
2	15	7.5	0 5.0			

20

25

30

35

39

42

45

6.67

6.25

6 00

5 83

5.57

5 25

5 00

3

4

5

6

7

8

9

5.0

5.0

50

4.0

3.0

3 0

LAND PRODUCTIVITY

Table 5 is similar to Table 4, with land in place of labour. The average as well as physical marginal productivity of land are calculated like that of labour. It will be observed in this case also that the average and marginal physical productivities at first rise and then decline as the quantity of land is increased. Just as the physical productivity of labour must decline because of the physical limitations on the product from a given area of land, similarly there is a definite physical limit to the amount that a fixed quantity of labour can produce, no matter how much land it has to work on,

This means that the physical productivity of land will eventually decline as labour is spread over a larger and larger area.

This law can also be considered as one of total diminishing returns. The total returns begin to diminish, when marginal returns have fallen to zero but further production goes on. The total returns diminish when there are negative returns after the zero point. No sensible farmer will like to push his production up to this point. But in an underdeveloped country where people cultivate as a way of life, production may be pushed in order to obtain food and other subsistence from the same piece of land. Consequently this law prevails.

One could also examine its third form as the law of diminishing average returns. This is a statement of the tendency of average returns to fall. This law may not be important from the theoretical point of view but the farmer, who is usually not conversant with accounting methods, takes into his calculations only the average returns, and on this basis he makes adjustments.

The total returns, when they diminish indicate the unprofitability of the whole enterprise. Marginal returns give a warning to the more calculating farmer (who maintains record) that the optimum point is being crossed. Average returns are usually an index for the average farmer who will not cross it but will make adjustments accordingly.

There are some assumptions underlying these laws. The first is that land is being used in the best possible manner. The second is that the art of cultivation is not improving. Both these assumptions are not realistic. Land may not have been utilized in the best possible manner. Secondly, ways of cultivation may not be stagnant. On the contrary, they go on improving from one stage to the other. Experience in India and abroad is a sufficient proof of this.

Cultivation is either intensive or extensive. The laws of diminishing returns apply in the manner of reducing additional output both under intensive and extensive cultivation practices. The marginal land will be that where the costs of cultivation are just covered by the productivity. Beyond this point if inferior land is brought into cultivation, diminishing returns will operate in one form or the other. Under intensive cultivation, when the same land is being cultivated time and again, the margin of cultivation will be that where expenses are just covered by the returns. If the same land is cultivated beyond this point, diminishing returns are the result.

In modern analysis, the law of diminishing returns does not hold that rightful place as it did once, when science and technology were not so much developed. In fact, the modern theorists believe that the essence of agricultural progress lies in countering the laws. This is done by better methods of cultivation, application of modern scientific techniques to 1t, and mechanization of agriculture. In India, the green revolution has already helped in countering the operation of this law at least for the time being.

The law of diminishing returns is still quite important in economic and agricultural analysis. The Malthusian theory and analysis which we discuss below is based upon the operation of this law. Similarly, the Ricardian theory of rent also derives from this law. The theory of distribution is largely based upon this law; the theory of marginal productivity (in distribution) bases its argument on diminishing returns of the factors of production. On the whole, therefore, the laws are pertinent to agricultural analysis.

Theories of Population

Malthus has been regarded as the founder of population theories. His essay on population is no doubt the first important attempt to understand the trends of population. According to him, population expands at an increasing rate, while food and other resources do not expand that much. This is an over simplification of the Malthusian explanation. While production of food and resources obeys the laws of diminishing returns and increases in arithmetical progression, population increase, according to him, is in geometrical progression. Food production and population growth are affected by independent factors. There is a disequilibrium between resources and food on the one hand and population on the other. The result is that the standard of living has to be lowered. Lastly, that population is checked by two methods. Natural checks operate in the form of natural calamities. Nature always seeks to bring about equilibrium. Man could also check population by preventing its growth. These checks are in the form of celebacy, late marriages, etc.

This theory has been criticized and nearly discarded now. It
is pointed out that mathematical interpretation of Malthus is wrong. Again, he did not take into account the effect of standard of living, scientific discoveries, and inventions on population growth and food production. Also Malthus confused food production with total resources and he did not take the biological facts into consideration. Population is restrained naturally by the advance of civilization and culture and also due to biological factors, and then population increase is not always harmful. It has been pointed out that this theory does not apply to the East European countries.

The above theory has been modified by the "Neo-Malthusians." They think that the desires for sex and for children are separate. They strongly advise the acceptance of birth control devices for population restraint as also for retaining a higher standard of living.

Next advances in the theory of population were made by several people whose explanations it is not possible to discuss in detail. Still some theories will have to be grouped together in order to understand the population problem. There are the biological, the classical, the cultural, and the Marxian theories of population.

Biological Theories

These theories have been summed up by Professor Raymond Pearl. According to him, after some time the rate of population growth begins to slow down. There are alternating periods of rapid and slow growth which occur in more or less cyclical manner. There is an S-shaped curve of population growth. But the overall tendency of population is to increase in a steady manner. He arrived at this conclusion after his experiments on insects and flies. Another principle of the biological theory, explained by Doubledary, is that population is connected with the food of the people. Population is thin in pastoral countries, denser in mixed countries, densest in vegetarian countries especially where scarcity conditions operate. Similarly, Spenser also modified it by saying that in fact human progress and population pressures are related. He arrived at this conclusion by a study of the biology of production and its relation to progress. According to him, a constant economic exercise of skill, intelligence, and self-control is required to counter the constant increase in population beyond subsistence.

Cultural Variations

There are several cultural theories. The first was that of Dumont who explains the principle of social capillarity. All societies have established a social hierarchy of prestige. Savages subsist on what they produce. Civilized man accumulates so that he can be better off. This principle is prominent in societies which are civilized and those countries where status and caste are rigid. Social mobility spurs people to fight population and keep it down.

According to Felter, the emphasis should not only be on sex because human behaviour is much more complicated. Therefore, no single theory can explain population growth. In the lower classes where family is the production unit, limitation is not practised, because every additional child is welcomed. The Italian economist Nitti also criticized Malthus. He thinks that social organization is important in population growth. He has, therefore, put forward synthetic explanation. In a certain social organization, population may rise while in another it may not. The wealthy sections produce less while the poorer ones more. Another explanation is by Bentano who thinks that man is a creature of pleasure and seeks it. Among the poorer classes the sources of pleasure are limited, hence greater devotion to sex and more reproduction.

Another economist, Ungen-Stermberg, emphasizes that birth rate declines as a result of increase of human rationalism. Therefore, education and culture are the twin factors responsible for a fall in birth rate. Sombart has added the factor of organization to this analysis.

The modern tendency is summarized by Professor Glass who combines all these theories which boil down to two main factors socio-economic status and urbanization. The more urban a society the less steep is the rise in population. Similarly, higher the socio-economic status, lower the fertility rate.

To sum up, it may be pointed out that there are various factors of cultural nature which are responsible for the rise in population. All these factors need to be taken into account when discussing population from the cultural angle. But the whole thing is not explained by cultural theories alone.

Classical and Neo-Classical Theories

Several modifications have been made by different economists over

Malthus's analysis. The German economists, however, remained under his influence but felt that population might lead to greater production as it might mean a better division of labour. J. B. Say was of the opinion that Malthus's thesis was mainly correct: it applied to the conditions in France at that time. Richard Jones was the first to object very strongly to Racardian theory as also the Malthusian explanation. He thought that knowledge and foresight can discern evil and privation and curb population.

The classical economists upheld Malthus to a greater extent. Ricardo also fell in line with Malthus. Adam Smith was a little more optimistic and thought that population would be automatically adjusted to the economy though in the long run; this is in keeping with his general theory.

Marshall considered the Malthusian thesis as valid. He made a distinction between efficient and inefficient labour, and added that earnings or wages covered the expenses of bringing up children. He introduced the demand for labour into the population theory. Edgrawth and Sidgwick also considered the Malthusian approach as more or less valid.

Keynes, however, repudiated Say and advocated full employment. He was a macro-economist and wanted to know what determines the aggregate demand for goods and services, which is determined by consumer and investment expenditure. In his terminology, the community's marginal propensity to consume is continuously falling. A major revolution in the neo-classical theory is that the economy does not correspond to the competitive model imagined by classical economists. Monopoly and capital may not, however, raise the demand for labour. Hobson emphasized these very points in his work on imperialism.

The Marxist Viewpoint

Marx disregards the Malthusian theory and puts forward his theory of relative population under capitalism. Under socialism there need not be any population problem. It is surplus labour which creates a problem. He built the whole theory around exploitation of workers by capitalists. His disciples like Rosa Luxemburg and Lenin fell in line with him. Like Marx, they all believed that the greatest exploitation takes place when population increases more than variable capital. Marx puts forward the thesis that population capital ratio is important under industrial capitalism. Also if population grows more rapidly than variable capital, the situation is favourable from the investors viewpoint. Sweezy, the intellectual interpreter of Marx, concludes that population growth is important since it tends to counter underconsumption.

The Soviet school, led by Lenin, made some modifications in the Marxian thesis. They believed that private property reduces its fertility. They explained that the changes in the rate of population growth were due to private ownership. Emphasis is on the importance for the demand for labour. There is a correlation brought by him between the fertility decline and evaluation of capitalism. But these people do not carry the analysis to its logical conclusion.

Theory of Demographic Transition

This is the latest theory in the literature on population. These people believe that a country passes through three stages. In the first stage both birth and death rates are high and population is more or less stable. In the second stage the death rate declines, but birth rate remains the same; hence population increases at a rapid rate. In the third stage, birth rate also declines and the growth of population slows down and ultimately population declines. The backward countries are in the first stage, the developing economies in the second, and the advanced ones are in the third stage. All these things are well known but do not explain how population and development interact.

In relation to agriculture, the population pressure is already high in most of the backward countries, because they are passing through the first or the second stages. The additional inputs in agriculture do not increase production; there is a decline in productivity of agriculture. Hence they become an obstacle to growth.

Secondly, labour supply also increases at a high rate in the agricultural countries passing through the first or the second stages. The result is that there are a larger number of dependants. Generally, labour supply does not increase in response to the demand for labour. But increase is rapid in the agrarian and rural sectors.

Because of the increasing population, the problems of unemployment and underemployment are created, especially in the rural economy. These countries have already surplus labour. They cannot absorb all the additional labour force, nor can they create more employment opportunities. Capital formation does not improve with the growth of population. Additional numbers must be supported fed, clothed, and housed. Total consumption goes up; hence less remains for capital formation. All this will, however, apply under static conditions. The position is entirely different in a dynamic world which is moving fast.

Population and Agriculture

The broad conclusion that emerges from the Malthusian theory of the eighteenth century is that mankind was inexorably condemned to hunger because population grows faster than food production. It is true that agriculture obeys the laws of diminishing returns. It is also true that most of the agrarian countries are passing through the second stage of demographic transition. This means that their population is increasing fast. It is also true at the same time that science is progressing fast to change the structure of agricultural production.

Until recently there was, for example, a widespread feeling that the production potential of the soils of India was very low. This assessment was not without reason since studies of response to fertilizer application conducted prior to 1962 had revealed that an economic response was seldom obtained in crops like wheat and rice when the dose applied exceeded 20 kg of nitrogen per hectare. Indian soils which suffered from soil erosion could never be expected to give higher yields. Such a situation was, however, a scientific enigma. With the introduction of wheat varieties having the Japanese "Noran" Dwarfing Genes from Mexico in 1963, a sort of a biological revolution has already been ushered in; so much so that an all time crop of over 18 million tonnes of wheat has been harvested during 1968-69—a year which for all intents and purposes was below normal.

We have also before us the example of Japan where normally one would expect that laws of diminishing returns should start operating. But the country today is faced with the problem of plenty. Japan's total rice consumption is estimated at a little over 10 million tonnes a year and, as of the last year, over 3 million tonnes from the 1967 harvest were already filling the warehouses. This year the surplus is expected to reach $5\frac{1}{2}$ million tonnes while, in 5 year's time, if the same trend continues, the country is expected to be burdened with a surplus of over 12 million tonnes.

All this would go to indicate that while one may have nothing much to say about the theory of the application of the laws of diminishing returns as well as population pressures, the prophets of gloom have only been disappointed in their graves. Some of the suggestions made for reducing population are those of population control, migration of populations to the less populated parts of the world, and redistribution of the population so as to even out the population pressures within the country. While all these solutions may have their limited applicability, real solution lies in scientific innovation which has already brought about the "green revolution" in India and other countries. This will possibly keep the Neo-Malthusians guessing, at least for the next few decades.

CHAPTER SEVEN

CAPITAL AND ITS FORMS

SINCE MAN first discovered that productivity could be increased by the use of tools, capital has increasingly been used as a supplement to human labour. Every development of the productive process has necessitated or has been based upon a corresponding increase in the supply of capital. Modern production is absolutely dependent upon it. This is true for all types of economic activity including agriculture.

Capital has been defined as wealth which is used in the further production of goods. According to Roscher, "all labour expended for a near or distant gain falls under the head of capital." ¹ This has been explained by Boehm Bawerk, an Australian economist of the last century, in terms of "roundabout" production. He gives the example of a primitive man who has before him three ways of drawing water from a hillside spring. He can either climb up the hill as and when he needs water or store his daily requirements in some pot or prepare a wooden trough to let the water flow down the hill to him so that he would not have to climb the hill again. The labour which he spends on building the trough is the labour saved for future use; hence it is capital in economic terms.

Kropotkin, the Russian writer envisaged,² as far back as 1917, a time when the human race will have so nearly conquered the earth that much of agricultural production will be carried on under perfect control in green houses constructed of well-nigh everlasting concrete and glass, supplied with heat from the sun and with water from an equally permanent underground system. 'What is required to achieve this," he said, "is to invest time and energy that can be spared from current food production to building these permanent structures."

¹ cf. Walker, p. 62.

² John Donald Black, Introduction to Economics for Agriculture, p. 116.

Origin of Capital

Very carly man lived by gathering his food from wild plants and by hunting wild animals. He had no tools or weapons to assist him in gathering the produce or in catching the animals. The devices which modern man possesses today have put immense power in his hand to produce more than his ancient ancestors. An enquiry into the evolution of these devices also tells us about the origin of capital.

Let us suppose an enterprising primitive fisherman builds a canoe, to help him in fishing. He works hard, catches more fish than his daily need and spends the next day on cutting wood for making a canoe and so on until the canoe is ready. The canoe enables him to go a few miles out to sca. He is able to catch as many fish in a single day as he could catch previously in a week. The canoe is his capital. The process may go on. He may use the surplus catch to hire labour, build more canoes and increase his catch of fish still more. He may not work himself but live on the fish caught for him by the labourers employed by him.

The simple instance of the fisherman tells us that capital arises solely from savings which result from self-denial and abstinence. The fisherman found time to work on the canoe by working longer and harder to catch enough fish to save some for his food on days when he was busy making the canoe. Alternatively, he managed with fewer fish than usual for his meals. In the first stage, savings are rather painful. Therefore, they command more value in exchange. The subsequent increments of capital are, however, gained at a constantly diminishing sacrifice. The remuneration received tends to decline also.

The use of capital goods raises the output per unit of labour. Capital releases labour or in other words economizes in its use. The manpower thus released can be utilized for the production of more wealth or it may be idled away or directed to a pursuit of the arts, well-planned leisure, or amenities. The accumulation of capital gives rise to a number of economic and social phenomena. It has been responsible for creating a class of capitalists. The rise of capitalists has led to class struggle between them and proletariats. In the beginning, capital was expended to the means of subsistences. The fisherman has accumulated supplies of food to sustain him "while he was too busy making the canoe to go out fishing." The surplus that accrued after the canoes had been made was used for paying wages to hired labourers and to buy raw materials for building more canoes. Thus capital consists of subsistence goods, tools and raw materials used in the manufacture of the final product.

Distinction between Land and Capital

Some economists consider land as part of capital itself. Business and legal phraseology does not distinguish between the two in practice and considers both to be fundamentally alike. Capital is defined as the stock of goods of all kinds including land, existing at a given moment. On a very broad basis, land consists of those goods which are given by nature, while capital constitutes goods made by man. The main distinctions are as under : (1) Land is fixed in nature but the supply of capital depends on the will and desire to save. (2) Unlike land, capital goods are subject to wear and tear and have a limited life. Their proper upkeep can at best only prolong the life of such goods. Unlike capital goods, land cannot be replaced by new lands but is capable of being used productively indefinitely with care and forethought. (3) Land is immobile, but capital is not.

Similarities between Land and Capital

Income derived from land depends to a great extent on what has been invested on its improvement, so that there is often a tendency to regard land, as a kind of capital, on which man has spent his labour and money to make it productive. In determining the price of land, the capital outlay on drainage, terracing, wells, irrigation, etc., is taken into account. Dr. Lee says, "Clearing the bush or timber is done once for all and serves for all future operations on farms. In many parts of the country clearing is a very large item in the purchase price of land. Sometimes it exceeds even the price of uncleared land. It often takes numerous crops to yield a net return sufficient to pay for the clearing of land. Since clearing endures as long as the land, the cost of clearing should be considered as a part of the purchase price of land." The same consideration should, according to Lee, be applied to drainage, terracing, and irrigation systems. Thus the old distinction drawn between rent as the price paid for "the original and indestructible powers of the soil" and interest for capital invested in improving the quality of land ceases to have much significance. The grades of land differ widely and, in the case of some, the value of land in its natural condition forms a small portion of its total value on account of large sums spent on making it fit for agriculture.

Capital and Labour

Labour as such cannot be stored and is lost completely when it is not employed but it can be turned into capital or consumption goods. Capital can be stored and is not lost, though it depreciates.

Capital and Money

Money is a medium of exchange---a means to an end, namely, capital. In other words, money is the symbol of capital. A farmer's capital may be expressed in money. But his real capital consists of various tools, farm buildings, and farm machinery.

Capital -- A Stock or Income

It is generally agreed that capital is a stock of fund existing at a given moment as opposed to income which is a flow of funds over time. Private capital may include titles to stocks and shares which are indicative of the right to a fixed money income of a certain proportion of profits earned.

Classification of Farming Capital

Capital goods have been divided into fixed and circulating on the basis of (i) durability, and (ii) use.

Fixed capital consists of goods which can be used over and over again in production, e.g. machines and buildings. They are not consumed quickly and their utility is not seriously affected during a short period. According to Guide, fixed capital can be used for several productive acts and includes all permanent instruments such as land and improvements, machinery and moveables of that kind. Circulating capital comprises goods which are generally used only once as they are consumed in the process of production itself. The examples of such goods in farming are seeds, manure, cattle feed, etc. All these have, in the first instance, to be provided out of the initial capital and after having been used up on the course of production are regained in the form of farm products with which the farmers secure possession of fresh stock of seed, manure and cattle feed which are again used in the next cycle of production; hence the term circulating or working capital is applied to them.

Based upon the idea of use, capital goods are also classified into free capital and specialized capital. Free capital consists of goods which can be used in several different industries, such as copper, coal, iron, and paper. The qualifying word "free" refers to the utility for several purposes. Specialized capital, on the other hand, consists of those goods which can be used in but one type of production, such as the machinery in a mint or a cigarette manufacturing machine. This classification emphasizes the risk factor of obsolesence in the case of specialized capital which may be rendered worthless if there is a shift in the demand for the products in which they are used. Keatinge suggests the following classification of farm capital:

(1) Fixed Capital :	(a) Land ; (b) Building and permanent
	improvement ; (c) Stock ; (i) Livestock-
	breeding and working, (ii) Deadstock-
	implements, tools, machines
(2) Working Capital :	(a) Circulating : (1) Manures, (i1) Seeds, (iii)
	Produce of land, (iv) Cash for expenses
	(b) Reserve Fund : (i) Replacements,
	(ii) Sinking fund, (iii) Insurance

Livestock used for breeding or for production of milk, eggs or wool might be classified as fixed capital. But when it is produced for being marketed as beef or meat, it may be classified as circulating capital. To overcome this difficulty, Thomas³ classified capital into three groups: (1) equipment, (2) livestock and growing crops, and (3) requisites or materials.

Equipment. It refers to those "permanent" capital goods which help labour in production. It may be *immovable*, e.g. buildings, fences, drains or roads, as well as *movable*, e.g. machinery and tools.

³ Edgar Thomas, pp. 36-9.

The primary function of equipment is to help labour to increase its efficiency in the productive process. This help can be rendered in many ways: lifting water, supplying motive power, saving labour or even lessening fatigue and boredom.

Livestock and standing crops can be subdivided, according to the function they perform, into three categories. (1) Work-stock, which in this country is practically limited to bullocks, though camels, horses, donkcys, and mules are also used. (2) Productive stock which includes (a) breeding stock kept for their progeny, e.g. bulls, buffaloes, (b) livestock kept to produce milk, eggs, wool, etc., (c) perennial crops yielding more than one harvest, e.g. plantations, grass, fruit trees. (3) Stock in process which includes all annual crops as well as all livestock which are themselves being produced for their liveweight.

In a sense, both work-stock and productive-stock may be regarded as part of the equipment of the farm. But being living things, they differ from the inanimate equipment in two respects. First, they differ in the incidence of depreciation in that during part of their life they appreciate in value. A young work-horse increases in efficiency for several years after breaking-in, a heifer increases in her productivity for two or three lactations after the first, a plantation of fruit trees comes into production about the seventh year but its output should increase each year afterwards for upwards of ten years or more before reaching full bearing. Secondly, all livestock and crops are subject to disease and various risks of pests, etc.

Requisites or Materials. These include most of the things, other than livestock and crops, generally classed as circulating or working capital, i.e. the inanimate things which can be used only once, such as food for livestock, manures, seeds, fuel and a number of miscellaneous items. It is simpler as well as more appropriate to the Indian agricultural situation to classify farm capital as *fixed*—(*i*) real estate, permanent structures and improvements on land, (*ii*) livestock, (*iii*) Dead-stock, i.e. machines and implements; *working*—seed, manures and fertilizers, cattle feed, i.e. stock of farm produce, and cash.

Characteristics of Farm Capital. Physical and biological forces contribute considerably to agricultural production. Capital in

agriculture, therefore, has a number of features peculiar to it as compared with capital in commerce and industry.

(1) Land claims relatively a much higher percentage of total capital investment in farming. The Farm Management Surveys in India show that land accounts for 80 to 90 per cent of the total capital investment in farming, both fixed and working. The proportion of investment on land to total investment in farming varies according to the type of farming, location of farm and quality of land. In poultry and pig-keeping the requirements of land are small even when the farmer grows feed for poultry and pigs. In cattle ranching, large areas of land are needed although the land is usually of cheaper type. The influence of location and other factors on the value of land has already been explained under land appraisal. Where land is rented, livestock, machines and buildings account for a major share of total investment. With mechanization, investment on machines is gaining in importance.

(2) All livestock-cattle, pigs and poultry as well as crops standing or stored are subject to natural calamities, diseases and pests. An industrialist is almost free of such fears in respect of his capital investment.

(3) Because of the seasonal character of faiming, machines, equipment and draught cattle remain idle; the period of idleness varies according to the nature of the farming enterprise and the intensity of farming. This raises the working expenses on these capital items. The period of turnover in agriculture is much longer than in industries, especially in the case of field and tree crops, beef cattle, pigs., etc.

To conclude, it may be stated that the terms "money," "capital," and "investment" are not synonymous. Agricultural capital can be broadly classed into capital, equipment, stock, and requisites; machinery should in fact be treated as an additional class. Same can be said about farm buildings which are strictly speaking a form of capital. Regarding investment there are miscellaneous types, e.g. agricultural paper and bonds. But these are not very common in the rural sphere. Still, the role of capital is of increasing importance. With the greater modernization of agriculture, modernized farming is fast becoming capital-intensive, though in the traditional economies it is still labour-intensive.

Agricultural investment covers all sorts of operations in different

forms—buildings, cattle, equipment, and machines. Capital productivity is of importance for the productivity of agriculture. The range of efficiency and productivity of agricultural capital can be increased but only with the suitability of the capital investment. This does not mean that mere mechanization will deliver the goods. There are inherent limits to the mechanization of agriculture though the application of machines is daily growing. In short, the greater capitalization of agriculture is likely to prove beneficial to the economy in general and to the rural sector in particular.

CHAPTER EIGHT

AGRICULTURAL STRUCTURE

AGRICULTURE is characterized with some distinct enterprise operations, type systems, and modes of farming. These are different from those in other spheres of human activities. We shall discuss in a very simple manner some of the agricultural enterprises first. This description will be followed by an account of the various operations of farming and rounded off with a brief review of the different systems and modes of farming.

AGRICULTURAL ENTERPRISES

Agricultural enterprises are often divided into three classes: direct, indirect, and spare-time. Generally speaking, a farmer is strongly influenced by the community in which he lives as also by its locale. Evidently, geography is an important factor. Another consideration is the human one. The personality of the agriculturist colours all these enterprises. A third consideration is the social factor ; he is guided by his social environments and he tries to live up to its expectations. Fourthly, there are the economic forces which are now percolating to the country side and influencing agriculture even in backward communities.

Coming back to enterprises we may deal with the first category, the *direct* ones. These direct enterprises are alternatively known as *cropping* enterprises and are so called because they are related to tillage including harvesting, sowing, and winnowing. The climatic factor makes them uncertain; their successful completion is a function of climate and weather.

The second class, the indirect enterprises, are also known as preparatory. They refer to the preliminary work which may be essential for undertaking some major tasks, for instance, cropping, fencing, weeding, draining, etc. Similarly, securing finance for farming operations is also a preparatory or indirect enterprise.

The last type are the spare-time activities which usually add

another string to the farmer's bow. They may also be regarded as subsidiary occupations. They can be social as well as unsocial. For instance, litigation is an unsocial spare-time activity while a cottage industry may be a desirable economic undertaking.

Another type is usually added to these enterprises: the cultural. These are not related to farming but are important for the farm family and from this point of view equally desirable.

Farming Operations

Next in sequence are the operations of farming which are usually sub-divided into time, sequence and miscellaneous categories, including even wasteful operations.

There are certain considerations in the selection of these operations. First, several possibilities are open to the farmer. In selecting lines of production, he is guided by the possibilities of specialization and his own capabilities. Therefore, in applying the principle of choice, he selects those operations that will make it worth his while to devote his time and resources. He has to weigh the different and adverse factors and forces in making selection from several assignments. *e.g.* cultivation, cattle, marketing, and plantations. He has to judge the cost, on the one hand, and the price, on the other. Physical and biological factors also affect agricultural operations.

The time operations cover competitive, supplementary, and complementary operations. The competitive ones are more or less simultaneous; a simple crop may be grown to the exclusion of all others. The supplementary operations do not make conflicting demands on labour, capital, and other resources; they reduce and even eliminate the idle time and utilize equipment. The successful farmer is usually in search of a good combination of supplementary operations. The complementary operations punctuate the gap and the recesses between cropping and harvesting with productive work and are responsible for progressive agriculture.

The second category is the sequence or routine operations. They cover four types: planning, preparatory, substantive, and subsequent. The first two (planning and preparatory) are preliminary while the latter two refer to tillage. Planning is essential for successful agriculture. This means less waste and better utilization of farm resources. Planning is usually invisible and off-thefarm. The preparatory operations enable the latter to prepare for actual farming and aim at improving productivity. They are onthe-farm activities and also visible. Substantive operations refer to cultivation and are also the major ones, like tillage. The subsequent or the follow-up operations make agriculture more profitable (*e.g.* processing and weeding) and are undertaken after tillage is over.

Some miscellaneous categories may also be mentioned. Usually two more types are classified, the linkage and the production operations. Under the former are included the major, the minor, and the subsidiary ones. The major ones are those on which the peasant lays great emphasis and are his main pursuits. The minor ones are only incidental though these may be independent. Subsidiary ones derive from the major ones and are dependent upon them.

From the production angle, farm operations are classed as productive, unproductive, and wasteful. Evidently the first class covers those that improve production while the second type are not directly related to production though these have to be normally undertaken. The wasteful operations are definitely injurious e.g. litigation.

In the backward communities the unproductive and wasteful operations dominate the farmars' routine. In the advanced economies there is a lot of planning and preparation is done before actual tillage and every effort is made to eliminate waste in all its forms.

Types of Farming

There are some special types of farming which require our attention. These types refer to the way in which the farming is carried on. Broadly, two divisions can be made: pastoral and arable. But other types are equally valid. They are specialized and diversified farming; intensive and extensive farming; and wet and dry farming. We shall discuss all these types of farming at some length as they are important in Indian agriculture.

Pastoral and Arable Farming. This is the first classification of farming according to "types." Actually, pastoral farming was in vogue much before man learnt to cultivate. But with the development of civilization and the interplay of economic forces, arable farming began to be practised and has now come to stay. Still a comparative study of both types is rewarding.

Pastoral Farming. Land is usually under the natural grass and the main purpose is to raise cattle, horses, and sheep. This is also alternatively known as ranching; ranches are of abnormal size and their main purpose is to raise cattle. They are common in America. Now-a-days grass farming is being done on scientific basis and grass lands are improved by draining, manuring, seeding (with good grasses), mowing, and hay-making. This system is common in Australia and New Zealand where large tracts of land are available. In other types of pastoral farming, dairying is usually done, *e.g.* in Denmark and Great Britain. In the underdeveloped countries, however, land is left to grow natural grass, the main objective being subsistence. This is common in most of the tribal regions of the world. With a rise in population, and improvements in farming methods, arable farming becomes necessary since it is realized that pastoral farming is neither economic nor remunerative.

Arable Farming. Under arable farming, crops are grown and agriculture is conducted as a profession. There may be pure (or single-crop) husbandary where one particular crop may be raised as for instance in most of the rice-growing areas of the world. Such farming is, however, subject to all types of fluctuations and requires close attention, *e.g.* adequate manuring, pest and disease control, and suitable mechanization. Most of these farms are on large scale, as in the West. Even in small-scale farming single groups are raised due to seasonal or customary compulsions. Generally, the crop often meets the food and sometimes the cash needs of the peasant.

Arable farming is also of wet (irrigation) and dry (rain-fcd) type. Wet cultivation is again sub-divided into two types, e.g. pure wet and garden cultivation. Under the former, abundant irrigation is required and scasonal crops are grown; while under

the latter, not much irrigation may be necessary and perennial crops may be raised.

Dry cultivation is, of course, important as a large area in India is under it. This is the next classification in farming types. Historically speaking, specialized farming is the best in the series for it calls for great technical skill and advanced knowledge of farming techniques. Mixed farming came much earlier, with the transition from nomadic living to settled agriculture. And it appears that diversified farming is an extention of the mixed type. It began to be practised, when farming became more and more specialized. In most of the under-developed countries, however, diversified farming is nothing more than subsistence farming and is, therefore, more of a disadvantage rather than an asset. A comparative review of these three farms will be both interesting and revealing.

Specialized, Diversified, and Mixed Farming

Under specialized type, differentiation may be made according to the crop or the work in which a farm may specialize such as plantations, dairy farms, etc. These farms are usually one-crop farms in which huge sums of money are invested. They are usually the corporate type, run on profit motive. They are generally mechanized: cultivation is carried on a modernized scientific basis. They are confined to a few large estates and plantations located in certain selected regions of India. Great care and special attention has thus to be devoted by the farmer in deciding upon the type of cultivation to undertake. The wise cultivator applies the principle of choice in the selection of crops and enterprises. For these speciality crops, various factors have to be weighed and suitable adjustments made. Mechanization and irrigation are the major problems. Soil and climate are other factors. As studied elsewhere, horticulture and fruit growing require a lot of preparatory work while vegetable farms are treated as subsidiary enterprises.

Combination of Enterprises

The problem of organizing a farm involves more than merely having a variety of enterprises. The most important question is which combination of enterprises to use and what should be the relative size of each. Even though wheat or rice may ordinarily be the most profitable crop in a particular region, the result may not be the maximum return for the effort expended. The farmer might find it more profitable to produce less wheat or rice and release part of the area for growing fodder crops for feeding the cattle. The enterprises must be selected with a view to obtaining a satisfactory return from the land for a number of years and not just for a single year. They must also make the best possible use of labour and capital as well as of the land itself.

The only satisfactory basis for deciding on the enterprises is the net income promised by the farm business as a whole, if it is organized around the proposed enterprises. In order to select the right enterprises for a certain farm, one must study the relationship between them. The decisions concerning the selection of enterprises depends not only on the size and type of the farm and the soil productivity, but also on the amount of available farm labour, cost of establishing the enterprise, expected prices of the commodities produced, and marketing facilities. Consideration and evaluation of these factors must be business-like, and the economic advantages and disadvantages of each enterprise should be carefully compared before arriving at decisions. There may be a conflict or competition between certain enterprises for land, labour, or capital. In planning his farm, the farmer should try to select for his main sources of income those enterprises which promise to yield the largest net income for the use of his resources.

Diversified Farming

This is another type of farming which is also prevalent in several countries. Under this the farmer's income is not derived from one but several sources. A further stipulation is that no source brings in more than 50 per cent of the income. This means that several enterprises are being pursued on the same farm. The extent of diversification, however, depends upon the variety of the sources of income; the more numerous the sources, the more diversified is the farm.

Some advantages are claimed in this system. It is pointed out

that the farmers and the labourers are kept engaged throughout the year. Crop rotation is also possible. Nearly all the farming operations are sequential, evidently because of diversification. Mixed cropping is also possible; several types of crops are grown and the land is kept cultivated throughout the year. Good use is made of the varied farm resources and agricultural equipment and machines. Another advantage is that the flow of farm income is regular. The farmer can suit his investment to the climate and natural resources available on his farm. Fluctuating farm prices need not stand in the way of the peasant to have a diversified farm, as the ups and downs in various prices of various commodities tend to be neutralized. It is also pointed out that diversified farming will be good for the novitiate, since it is on the whole less risky than specialized farming, in which there is dependence on a single operation or enterprise. And above all diversified farming caters well to the needs of an expanding population.

At the same time there are also some disadvantages incidental in this system. In practice, it so happens that the same machine and the same labour have to attend to several competing assignments. The farmer entrepreneur under this system has less of leisure available to him because he has also to look through numerous enterprises and operations. The surplus produce from various harvests is not a large quantity, unless the farm happens to be a very big one. Therefore, an average farmer is faced with the problem of marketability. Again, it is not possible for ordinary peasants to own and maintain several types of machines required for all the various crops and enterprises. And, many defects and lapses in the process of farming of certain crops go unnoticed by the farmer-entrepreneur who cannot at the same time devote attention to all the various assignments.

In underdeveloped countries, diversified farming is no doubt the order of the day but its various defects coupled with the fact that the unit of cultivation is small outweigh the advantages inherent in this system. Therefore, unless the farmer's cultivation unit is not large enough, this type of farming may not benefit him. It will prove more advantageous only when the farmer is fully aided by a trustworthy manager and some capable assistants to whom he can delegate some of his assignments.

Mixed Farming

Mixed farming crop-raising is combined with the rearing of livestock such as cows, buffalces, sheep, pigs, or poultry. It is essentially a combination of two or more enterprises run as a single, coordinated farm business. A combination of such enterprises yields a better money income and provides work throughbut the year. It ensures more efficient utilization of labour, equipment, and other resources. The farm by products such as fodder and straw are used for feeding livestock which produce readily marketable products such as milk, meat, and eggs. Mixed farming helps in supplying all the food needs of the farmer from his own land, and provices a valuable return from livestock in the shape of farmyard manure.

There are certain basic objects which should be kept in view while selecting enterprises and combining them. These, however, will vary in relative importance according to the system of farming and the availability of farm resources: (1) To increase the gross income from the farm; (2) to concentrate the feed crop into produts which are less expensive to transport and are in greater demand for human consumption; this is often done by combining livestock farming with crop farming; (3) to utilize waste farm products; (4) to distribute the use of land, labour, power, and equipment over a greater part of the yea; (5) to distribute widely the production and murket risks; (6) to help maintain soil fertility; (7) to provide home-grown foods for the farmer's family; and (8) to provide animals for farm operations.

The choice of enterprises in mixed farming is affected by (a) physical factors such as (i) climate, (ii) soil, and (iii) topography: these determine the general possibilities and potentials of a region; (b) economic factors, viz. (i) marketing costs, (ii) competition with other enterprises, (iii) changes in prices of farm products, (iv) cycles of overproduction and underproduction, (v) special demands of certain markets, (vi) and values, (vii) capital available, (viii) labour supply, (ix) pests and diseases, and (x) type of farming followed by neighbours.

Intensive and Extensive Farming

These are also important types and references to them recur frequently in the agricultural literature. They are the accepted systems in vogue nearly in all the countries. In intensive farming, land is harvested to the maximum profit capacity and is cultivated without a break. Under extensive farming, on the other hand, rotation of crops may be practised and land may also be left fallow in order to let it recoup.

Intensive farming is usually prevalent on small holdings. Its chief requirement is ample irrigation and perfect cultivation. Land is deeply ploughed, heavily manured, and scientifically cultivated. Weeding is especially attended to. There is practically no rest for land except when it may have to be left fallow so that it does not get sick. A small piece of land is made to give larger profit and sufficient livelihood for the farm family. A lot of capital is sunk in land which is a restrictive factor. In most of the progressive countries, intensive cultivation is common. Most vegetable gardens in suburban areas belong to this type.

Under extensive farming, the holdings are large. This is often undertaken in areas of dry farm. The yields are low or at best moderate but often uncertain. Manuring is restricted and applied in rotation. Fertilizers are rarely purchased; only the farmyard and other manures (e.g. cattle droppings and refuse, and green manure) are used. The cost of human labour is kept low. Its main characteristic is that the owner depends upon the total yield from a large area. Nearly all the dry farming areas are extensively cultivated.

Dry Farming

The principle of dry farming consists in conserving as much rain water as possible in the soil for utilization by the crop during the growing period by the construction of bunds or terraces on the contour. Moisture is retained tenaciously by the clay particles and can be made available for plant growth only by the suction force of the plant roots. Further, in the case of easily permeable soil, the water penetrates downwards and the water table is raised. In India, out of the total cultivated area of 150 million hectares, only about 25 million hectares, *i.e.* 17 per cent, has assured irrigation. The major portion of the cropped land thus depends on the rains. Primary concern of the farmer in the unirrigated or dry-land areas is, therefore, to conserve as much of rain water as possible, and to follow farming practices which would help in the maximum utilization of this water for crop production.

The term indicates a system of growing crops without irrigation in areas of low rainfall, *i.e.* areas receiving up to 600 mm of rainfall a year. Such areas are known as semi-arid areas. The north-western parts of India constitute the driest area receiving less than 500 mm of rain annually. The main dry farming areas and the crops grown are given below:

The dry-land regions of Kashmir, Punjab, Rajasthan, the southwest part of Uttar Pradesh and the north-west part of Madhya Pradesh, having rich alluvial soils. The principal crops grown in kharif are bajra, jowar, mung, moth, and urid. Wheat, linseed, rape, and gram are grown in rabi.

The Deccan plateau comprising low rainfall areas of Maharashtra, Gujarat, Mysore, and Andhra Pradesh, have clay soils developed from trap rock. *Bajra* is grown in *kharif* and *jowar* in *rabi*. Cotton is also grown.

The plateau regions of Mysore, Andhra Pradesh, and Madras having red and black loam and clay loam soils developed from granite rock; jowar, cotton, and kangani are the main crops.

Some Problems of Dry Farming Areas

The main problem in dry farming is the conservation of moisture received through rainfall and atmospheric humidity. In these regions, rainfall is prized, and has to be stored avidly but spent frugally. The problem is further complicated by the fact that the rainfall in these areas is very low, uncertain, untimely, and highly variable. Partial or complete failures of crops are common. Moisture conservation is accomplished by adopting various cultural practices. A deep, water-retentive and fertile soil which would contain a large amount of available moisture is the first and most important requirement for successful crop production under dry farming. As the water-table under dry-land conditions is far too down in the soil, the only moisture available to plants is that present in the root zone. Hence, the depth of the soil required is the same as the depth up to which crop roots develop. The roots of most cereal crops go to a depth of four to six feet, whereas legume roots go much deeper. A soil layer of five to six feet in depth is, therefore, the primary requirement. The physical condition and fertility of the soil being important, soil conservation by checking erosion (which causes loss of the productive top-soil) is intimately associated with the main problem of water conservation.

Another prominent problem of dry-land cropping is the adjustment of the cropping system to soil moisture, *i.e.* choosing the right crops and managing them in such a way as to make the best use of the available soil moisture supply. For instance, if wheat is to be grown successfully in a dry farming area, there should be enough moisture in the soil at least up to a depth of four feet at the time of sowing. Otherwise, the wheat crop is most likely to fail. In such cases, it may be worthwhile to sow some other crop such as barley or oats later when there is enough moisture in the soil. If the moisture is not sufficient even at the time of their sowing, planting of jowar at a still later stage could be considered. In many areas, it does not rain in time or in sufficient quantities to enable a particular crop to be grown and late planting has to be done in such cases. But, it is always important to decide whether it would be better to change over to another crop when the sowing time for the main crop has already passed.

Intensive research on the problems of dry farming has been carried out at the Agricultural Research Stations at Sholapur in Maharashtra, Nagri, Bijapur, and Raichur in Mysore, and Rohtak in the Punjab. Some related problems are also being studied at the soil conservation centres established recently throughout India. In 1957, a Desert Afforestation and Soil Conservation Station was established at Jodhpur in Rajasthan, This station later developed into an Arid Zone Research Institute with assistance from the United Nations. At this institute, problems of dry farming and afforestation are under investigation.

Moisture Conservation

The loss of rain water may occur through run-off from the soil surface, percolation into the soil and evaporation. Moisture conservation, therefore, consists in (i) preventing surface run-off, (ii) increasing the water-holding capacity of the soil, (iii) aiding the capillary rise of soil moisture, and (iv) lessening evaporation from the soil or through weeds. Soil erosion through rain water is a much more serious problem in dry farming than is generally imagined. Moisture conservation measures, therefore, also help in checking soil erosion.

Preventing Surface Run-off. Loss of rain water through surface run-off may be considerably lessened by helping the soil catch and absorb water. This could be done (i) by ploughing after the rahi harvest or during summer, (ii) by loosening up any hard or compact soil and subsoil, (iii) by deep hillside ploughing and tillage along contours, (iv) by ploughing at right angles to the slope, and (v) by bunding and terracing. In the case of ploughing unless a hard layer of soil or subsoil exists below the topsoil. In bunding and terracing, the spacing, design and type of bund or terrace are largely determined by the degree of slope, the type of soil and the amount and intensity of the rainfall. The main types are channel terraces, ridge terraces or bunds, and bench terraces.

Increasing the Water-Holding Capacity of the Soil. In the case of heavy soils, their water-holding capacity may be improved by the addition of organic matter to develop a crumb structure and to loosen the soil. Organic matter could be added in the form of green manures, crop residues, farmyard manures, or composts. In the case of sandy soils also, increasing the organic matter leads to greater retention of moisture by the soil.

Aiding the Capillary Rise of Water. A good contact between the soil particles helps the capillary rise of water. A firm seedbed is, therefore, desirable. There should also be a good contact between the cultivated surface soil and the subsoil, because a loose seedbed lacking such a contact is not conducive to the germination and growth of small-seeded crops. That is why compaction of sandy and loamy soils after deep ploughing is advisable. Subsoiling of sandy soils has to be discouraged as that would lead to loss of water through percolation and leaching and loosen the capillary contact between the subsoil and the surface layer.

Lessening Evaporation of Soil Moisture. The loosening of the top layer of three to four inches of soil with harrows, to form a soil mulch, was formerly considered to be of great importance in water conservation. But recent experiments have shown that, under dry-land conditions, soil mulch can not check the loss of water by evaporation from the soil surface. However, it has some influence in (i) keeping the lower layers of the soil cooler, (ii) helping greater condensation of atmospheric moisture in the form of dew on the soil surface (as in the mornings, the loose soil mulch is cooler than the unloosened soil), (iii) aiding, ready absorption and penetration of rain water to deeper soil layers, and (iv) destroying weeds which take up soil water and lose it through transpiration. Straw, manure, leaves, grass, and stubbles are the materials used to a limited extent for mulching.

Modes of Farming

The agricultural structure of a country is determined to a large extent by a study of the systems of agriculture. Modes of farming, however, take us deeper and closer to the realities of agrarian life and agricultural practice. While systems indicate the broad outlines of the agricultural framework, modes inform us about the way how agriculture is carried on.

Farming is more or less a way of life, especially in the underdeveloped and the developing economies. It is carried on more out of custom and tradition rather than economic calculations. Hence certain kinds of farming which cannot be included in any of the above heading may be grouped under *modes*. There are several *modes* of farming, *e.g.* subsistence, family, surplus, and commercial. They are prevalent in various kinds of economies.

The first is subsistence farming which hardly provides for the peasant and his family his means of living. It is especially prevalent

in the backward and the underdeveloped economies where farmers live on a sub-human level of existence. Strenuous efforts are being made to raise the farmers up from this low level. The subsistence farmers have often to lapse into the status of agricultural and landless labourers; this happens under the pressure of economic forces and the enlarged size of the farm.

Family farms. They provide for the family and afford its members employment and decent standard of living. The danger with these family farms is that unless the minimum holding is fixed by law, they may degenerate into the subsistence type. On the whole, these farms prove to be advantageous to productivity for the members of the family.

Under surplus farming the cultivator has a marketable surplus. This type is an improvement on the earlier two types. The aim in the developing economies is to turn family farms into surplus farms. Various factors go into making a farm a surplus one, *e.g.* good seed, modernized methods, and scientific management.

Commercial farming is pursued only for the purpose of marketing the produce. The emphasis here is on cash crops which may yield the highest return. This does not mean that other crops may not be cultivated. In fact, this type of farming is mostly on large scale; the farmer will select only those crops that give him maximum profit.

It may be pointed out in the end that the family and the subsistence farms seldom use modern scientific and mechanized methods of cultivation. But the surplus and the commercial farms have to employ these methods though in varying degrees in order to reap profit. Another point is that in the subsistence and family farming, there is a greater emphasis on raising of food crops while under the surplus and commercial types cash and commercial crops are important.

Farming Systems

By systems of farming we mean the patterns according to which agriculture is organized. Systems are important in that they often determine the rural and agrarian structure, which often derives

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from the organizational aspects (of agriculture) to which systems refer.

Agriculture has been organized in various countries on different patterns depending upon the economic, social, and political set-up in the country concerned. Black¹ grouped the various economic systems into three broad heads.

The Private Enterprises

Under this system, individual farms and households carry on economic and related activities. The key idea of this mode of functioning is "let the individual do it." The loose popular term for this is "free enterprise." Under the free enterprise, the predominating types are peasant and landlord tenant systems.

Peasant farming in its simple form covers all types of peasant proprietorship. This is the most common system in India. The farmers own their own resources and have full liberty to produce what they like. Most of them are small family farms and generally produce both for family consumption and marketing. The members of the family do most of the work on the farm. The advantage is that the farm family puts in their best although there is the danger of the holdings getting fragmented and subdivided into uneconomic units. The system is also called as *occupancy ownership*.

The Public Enterprises

Here the government organizes directly the economic activities. The more popular term for this is "state socialism." The distinguishing feature is that the workers on a state farm are wageearners while those on a collective cooperative farm are peasant members. The members of a collective cooperative farm have greater freedom to decide upon the management of the farm, owing to their collective ownership of the means of production. Again the method of paying wages on a collective farm is different from that on a *state farm*. State farms are generally equipped with up-todate machinery and specialists in agriculture to guide farming operations on a scientific basis. Suratgarh farm in Rajasthan is an example of state farming in India.

¹. Introduction to Economics of Agriculture, p. 32,

The Co-operative or Group Enterprises

A co-operative enterprise is an organization of individuals into groups of associations for carrying on economic and related activities. The key idea of this mode of functioning is "let the association do it." However, it is still a free enterprise economy. The association or group does not alter the nature of the economy from what is described as the "private way" discussed above. In co-operative farming, individual farmers, while continuing to enjoy ownership rights, pool their resources and cultivate jointly or severally under the supervision of an elected committee of management. Land is treated as one unit and the profits are distributed among the members. The farmers are able to take advantage of the economies of scale by proper allocation of resources and better management. Pooling enables them to make full and proper use of their resources and thereby increase production.

Besides the three systems discussed above agriculture is also organized on corporate farming and collective farming basis. Corporate farming uses capitalistic methods, and is mainly motivated by profits. It has the usual advantage of large-scale enterprise that leads to larger production and better marketing. Production is exclusively meant for sale. The workers including the manager are all hired. Hence the defects associated with absentee land-lordism are likely to infect its working. Examples of corporate farming in India are the plantations and the sugarcane farms owned by the respective factories.

Collective Farming

Under the collective farming, the farmers pool their resources and undertake to work together under a management committee chosen by themselves. This committee is responsible for farm management, allocation of work, distribution of income, and disposal of surplus. The land (of a collective farm), though originally belonging to the members, becomes the property of the collective farm, the member losing irrevocably the right of individual ownership. The farmers work together and earn their incomes mostly as wages. Such farms exist in Russia, China, and other Communist countries, None of these types may be found in its purest form anywhere. A major factor determining the economic system in a particular country is the political set-up and the professions of the government in power. Even history, traditions, and customs are subdued. The USSR and China are examples of this type.

More than half a century back, the whole of Russian agriculture was organized into roughly 25 million small peasant farms which had existed there over centuries. The October Revolution cf 1917 brought about far-reaching changes in it. Today, agricultural production is carried on three types of farms. The most important are the collective farms—*Kolkhozy*—which produce the greatest bulk of agricultural output. The State farms—*Soykhozy* —produce a much smaller fraction of the farm produce but are extremely important in some specialized products. The least important are some few remaining small peasant farms which produce a very small portion of all Soviet food. The Machine Tractor Station "MTS" works closely with the collective farms.²

Similar is the case of China, where starting from the small peasant proprietorship system of centuries, only some years back, the Communist China overhauled the whole of its agricultural organisation. Starting from "Mutual Aid Teams" and co-operative farms, it has now come to the system of Communes where, not to speak of agriculture, practically every economic function is being carried out by the institution.

On the whole, it can be said that most of the democracies have organized their agriculture primarily in the "private way" or the "co-operative way." None of them are wholly dependent on any one form or system of agricultural organization. There are other socialist democracies like those of India where we have a mixture of all the systems -peasant farms, co-operative farms, and even state farms.

The virtues of the system, based as they are on private property, emerge from Arthur Young's well-known aphorism "the magic of property turns sand into gold." Without going into the political or the social aspects of the case, the economic implications of the system, may briefly be stated as follows:

² Harry Schwarts, Russia's Soviet Economy, p. 296.

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(1) The ownership as well as the business aspects of the farm are under single control.

(2) Land being a living organism and the businessman being himself the owner, he is best suited to look after the improvement of land. The legal status of the owner ensures absolute security of tenure.

(3) In older countries where inheritance laws are in operation, the size of ownership holdings tends to become smaller and smaller so that they are rendered uneconomic. When this stage reaches, the farmer, being unable to earn a decent living from his holding, becomes poorer and poorer. Investments in land become impossible. The holding is usually fragmented. A vicious circle thus starts.

(4) Here comes a stage where disadvantages stemming from least division of function manifest themselves. The owner holder has himself to provide both landlord's capital and tenant's capital. In countries where surplus land is available, the owner farmer may have a tendency to withdraw capital from farming for the purpose of investment in more land although it might be more profitable for him to invest the same funds in working equipment for the farm.

(5) Since the distinction between landlord's capital and tenant's capital is more or less dim, the owner-holder, particularly the poorer one, is liable to neglect the provision of interest on property investment and cost of upkeep in assessing his farming income.

(6) Another serious danger arises from the failure to distinguish between long-term and short-term credit. The object of long-term credit is to borrow for permanent improvements of the land. But the owner holder is liable to mortgage his property for non-farm credit. When he is unable to repay, he ultimately loses his title on land itself. It has been well said that "if there is anything certain in agriculture, it is that the land should never be pledged for working capital."³

Most countries in North Europe exhibit the peasant system

^a H.M. Conacher, "The Relations of Land Tenure and Agriculture," Journal of Agricultural Economic Society, Vol. iv. No. 3, 1936, p. 176.

in its simplest form. Elsewhere, over a larger part of the free world, programmes of agrarian reforms are inspired with the objective of extending and perpetuating the system.

Tenancy. The impact of political, economic, and social factors over time has brought about a number of changes in the tenurial relations of the cultivators. Public authorities have no doubt started interfering in the working of these relations in the wider interests of the nation. But agricultural organization can still be considered as of the "private way" type unless the peasantry is totally deprived of their rights of property on the land, which in turn pass into the hands of the public authorities.

Systems of tenancy differ from occupying ownership in that there is both a legal and an economic separation of land ownership from land use. The tenancy system depends on a legal contract by which the owner of the farm property (landlord) lets it on hire for use by another person (tenant) who farms it.⁴ For the privilege of farming the tenant pays rent (not to be confused with the economic rent) in cash or kind to the landlord. Permanent capital is provided by the landlord and working capital by the tenant. Tenancy systems can be grouped on economic base: (1) form of rent payment; (2) degree of control exercised by the landlord; and (3) length of the tenancy agreement.

Form of Rent. Personal, services, or "labour tenancy," which is akin to feudal times, are not very common these days. Rents are not normally paid in labour of the tenant. Kind rents vary from one-fourth to one-half of the produce depending upon the contribution of the landlord towards the input factors.

In all countries where land becomes scarce, landlords have a tendency to exploit the situation by rack-renting their tenants. Public authorities have under such circumstances to step in and to regulate rents so as to protect the interests of tenants. Such Acts were passed in the United Kingdom in 1947. The land legislation in India also aims at fixing fair rents.

Extent of Landlord Control. The control by the landlord varies according to the political and economic conditions in a country.

⁴ E. Thomas, op. cit., p. 152-3.

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Most of the democracies of the world which have committed themselves to welfare ideals have been trying to restrict any interference by the landlord. But because of their political influence, the landlords have often succeeded in circumventing legislation that restrict their sphere of activity. Notwithstanding all this, the landlord control is being totally eliminated under various land reforms legislation. Once rent is paid to a landlord and that also at fixed rates, the tenant would invariably be free to manage his farm in whatever form he likes. However, there are extreme cases like the bushel renting system in the United States of America where the tenant may supply so little of the working capital and have so small a say in the management of the farm that he is in effect merely a labourer working under the landlord's direction.⁵

Length of Tenancy. There is no hard and fast rule about the length of tenancy. The common practice in India now is in favour of permanent inheritable leases. In earlier times, long lease "for life" was quite in vogue in the United Kingdom. In Scotland, long leases extending from seven to twenty years are still quite common. This has, however, gone out of practice in England and Wales where yearly leases are more common.

Implications of Tenancy System

First, the two important functions of *land management* and *farm management*, having been separately allocated, farm organization benefits from the contribution of both the partners. The tenant farmer is free to concentrate on the job of farming as against the duties of the upkeep of the property.

Secondly, the system widens the supply of capital and credit for agriculture. Competent farmers who have otherwise no resources for purchasing land can get a chance of working on the farm and improve their skill. Finances of the tenant being meagre, the landlord may often act as a buffer to the farmer and take upon himself a major portion of the market shocks resulting from price fluctuations so very common in agriculture.

⁵ Ibid., p. 154.

Thirdly, if the landlord is able and also willing to play his part, the tenant stands to gain a lot. Under the *metayage* system in Europe, for example, where the farms are small and the tenant's technical ability only moderate, the landlord is often in a position to guide and, if necessary, to enforce on his tenant improved techniques of farming.

All this would, however, seem to be all right under ideal conditions when the landlord may be considered as one of the most enlightened persons and fully conscious of the part he is required to play in the development of agriculture. Generally, this is not true. Landlords have been apt to misuse their powers; hence the necessity in various parts of the world for land reforms. So much so, that the history of land legislation stands testimony to the interference cf the landlord, not only in the management of the farm but also in the political and in extreme cases even in the religious freedom of their tenants, without any of the positive helps in the form of technical guidance and financial assistance.

The best is thus sought to be achieved by the provision of the well-known three F's—fair rents, fixity of tenure, and freedom of transfer or sale—in favour of the tenant. Land legislation in various countries is directed towards these principles. Besides, freedom of cropping and compensation for improvements as well as disturbances are also provided in a number of cases.

CHAPTER NINE

RENT OF LAND

RENT is the payment for the use of land. In revenue administration two different terms are used: revenue and rent. Revenue refers to payment to government by the landowner as a charge on land or on land owned. In case the land is leased the payment for this land made by the tenant to the landlord is known as "rent". Thus rent includes revenue because normally the landlord pays the land tax or revenue out of the rent received by him from the tenant. It is not necessary that the tenant may be using the land himself. The old land system permitted leasing of land by the tenant to the sub-tenant, in such a case it is the sub-tenant who uses the land. With the abolition of landlordism the rent formerly paid by tenants to their landlords is recovered by the government and is known as revenue and is not termed rent any longer.

In economics, rent may be described as that part of the produce which goes to the owner of land as payment for the use of his land. Each factor engaged in production claims a share of the value produced; the share claimed by the owner of land is rent. Ricardo defined rent as the payment for the permanent and indestructible powers of the soil. Since the productivity of land is improved by human efforts, Ricardo and other classical economists pointed out that not all that goes to the owner constitutes rent. According to them, rent represents only that part of the payment which is made for the original and indestructible qualities of land.

Theory of Rent

Among the classical economics Ricardo propounded his own theory of rent. The Ricardian theory of rent may be conveniently divided into four propositions: (1) Rent is the reward for the natural and indestructible properties of the soil. (2) Rent is the surplus income which land returns to its holder above cost. (3) Rent is not
earned from land which yields no surplus over cost. (4) Rent does not enter into price.

These propositions are based upon two main assumptions: (a) Lands vary in grades and qualities. (b) The order of bringing land under cultivation is from the best to the poorer grades as the demand for land rises to meet man's needs.

The Ricardian propositions may be explained with an illustration. Suppose Rs. 1,000 worth of factors of production are employed on A Grade land and fifty quintals of wheat are produced. The cost of production of wheat per quintal is Rs. 20 and as the price in the long run is equal to the cost (in which profits are already included) the price will be Rs. 20 per quintal. Rs. 1,000 are spent and Rs. 1,000 are recovered and there is no surplus income. As population rises B grade land is brought under cultivation to meet its increased demand. By investing Rs. 1,000 worth of the factors of production on B grade land, suppose only 40 quintals of wheat are produced. The cost per quintal comes to Rs. 25 and so the price rises to Rs. 25 per quintal. The owner of B grade land spends Rs. 1,000 and recovers Rs. 1,000. But the owner of "A" grade land recovers a surplus income of Rs. 50 per quintal over his cost. This surplus income is rent. In other words, grade A land yields no rent until grade B land comes under cultivation.

It is evident from the example given above that the owner of A grade land enjoys surplus income in the form of rent not because of any efforts on his part but because of the higher natural fertility of his land. Ricardo stated that fertility is indestructible meaning thereby that the owners of superior land could continue enjoying rent for ever.

As the pressure of demand rises and cultivation is pushed to inferior grade of lands, the cost of production goes up; the prices go up and so does the surplus revenue from the better grade lands over the inferior ones. This is how the higher price results in higher rent. It is the price that determines rent, and not the rent that determines the price; rent, therefore, does not enter into price. In other words, the lowering of rent would not lead to any lowering of the price, because price is determined by the demand and supply of the produce. Thus it was inferred that States need not intervene and control rents because a reduction in the rent would not affect the price level. A laissez-faire policy on rent was, therefore, advocated.

The Ricardian theory of rent was used by the socialists to discredit the classical economists. The inference that rent was the surplus income above costs was of great interest to the socialists. They argued "why should anybody get 'unearned' income?" and concluded that the system under which such an unearned income could be enjoyed must be abolished. Moreover, if a rise in rent is due to the rise in population, that benefit should not go to the landlord. It should be enjoyed by all. This is possible if the entire land is owned by the society collectively.

Criticism of Ricardian Theory

Firstly, fertility of soil is not indestructible. Good lands may get exhausted and depleted under continuous cultivation. But land also possesses certain qualities like soil, humidity, climate, etc., which are indestructible in nature.

Secondly, according to Carrey and Rashear, the statement that most fertile lands are always cultivated first was wrong historically. The experience of American settlers is on the contrary. In fact, Carey has pointed out that it is the inferior soil that is cultivated first simply because it is less cumbered with vegetation and, therefore, more manageable in the early stages. However, the more accessible lands are the first to be brought under the plough.

Thirdly, Ricardo's logic of cause and effect is wrong. His main argument is that recourse to the inferior soils comes first and the rise in price follows it. The true sequence, however, is that a rise in demand for a commodity due to a rise in population leads to a rise in the price. The rise in the price enables the inferior lands to be brought under cultivation. Thus the rise in price comes first and the extension of cultivation to the inferior grade lands follows it. Ricardo thus confused cause and effect, and hence came to wrong conclusions.

Fourthly, according to Ricardo, rent does not enter into price and the owner of less fertile (marginal) land does not get any rent. This, however, has not proved correct. As pointed out by Marshall, unless some inducement is given even to the owner of the least fertile land, he would not bring his land under cultivation. Some kind of inducement is essential. That payment will enter into the cost and, therefore, into the price. Rent, according to Marshall, is not in any way different from the rewards of other factors.

None of the above criticisms demolishes the Ricardian theory of rent in which rent is the surplus of income over cost in the case of better grade land as compared with the difference between the cost and the income from a marginal land. Whether the inferior land is cultivated first or the last need not alter the situation. If the order of cultivation is reversed from good to poor, poor to good, inferior and the good lands are cultivated. Similarly, if Carrey's contention is accepted as correct and cultivation starts with inferior lands, the argument that demand brings poor land under cultivation cannot hold any longer. In general, it has to be admitted that farmers would prefer better grades of land for cultivation first and step on to inferior lands when the first quality land is exhausted. Again, it is not material what force brings poor land under cultivation. The essence of Ricardian theory lies in the fact that when different grades of land are cultivated, the same effort results in different levels of income. Whether the fertility of land is indestructible or not, is also not basic to the Ricardian theory of rent. As long as it lasts and as long as it yields a surplus, the element of rent does accrue.

Unfortunately, the real point that seems to have been missed is that in developing his theory of rent Ricardo did not put up any new concept other than the basic concept of scarcity on which the very foundations of economics are laid. Only those goods are economic which are short in supply, those which are not scarce are free goods. Hence the correct explanation of the theory of rent is the same as for any other factor of production, *i.e.* if a particular class of land is short in supply the farmers who want to use this land against the poorer grade lands have to pay a price for it; this also explains why one has to pay even for inferior grades because a stage comes when even the latter is not available free or in other words is in short supply compared with the demand for it. This explains in simple terms that rent is not different basically from the rewards for other factors, *e.g.* wages of labour and interest of capital. Just as higher productivity land yields higher rent, so also higher productivity labour earns higher wages. Even today in parts of Africa where many hands are not available on land, and where because of the lack of technological development each man cannot manage more than a few acres, land can be obtained still free of rent, only the permission of the community is enough. This proves that it is primarily the scarcity attribute (as in the case of other factors of production) that gives rise to rent of land, the difference in productivity being no doubt an important factor in determining the level of rent.

In modern economics the emphasis is on the scarcity attribute. Agricultural products may become scarce relative to the society's needs for them. The scarcity causes rise in prices which brings (a) inferior lands into production profitably, and (b) the superior lands earn a surplus over their previous income. The scarcity attribute is present not merely in agricultural lands but also in all other factors of production. This explains why rent accrues not only on agricultural land but also on land used for houses, mills, and as site for market.

Rent as a Differential Advantage

Marshall improved upon the Ricardian explanation by pointing out that rent arises because one plot of land possesses a differential advantage over another. The marginal land does not possess any advantage and, therefore, no rent accrues on it. All the various considerations (including the physical and economic efficiency of land) were covered under the term "differential advantage" by Marshall. This principle explains the phenomena of rent better than that of Ricardo. It includes the explanation of rent arising due to both situation and fertility. The differential advantage principle has, therefore, been accepted by several economists. Situation and fertility play an important part in the determination of rent. By accepting the differential advantage thesis, Marshall did away with the very basis of the Ricardian theory, viz. the Malthusian explanation of population growth.

Not this alone, Marshall went further to apply his theory to factors other than land. The high payment for the use of other factors under conditions of tempcrary scarcity he termed as "quasi-rent." This is the surplus earned by factors the demand for which suddenly increases, *e.g.* in wartime. Since these factors cannot be immediately reproduced, they have to pay more in order to be employed; this is "quasi-rent".

Thus Marshall had in his mind also the factor of scarcity as being one of the determinants of rent. Marshall's theory, however, does not account for rent which is paid to landlord whose land does not possess a differential advantage. Probably the element of scarcity does not appear to have been given that place of prominence which it should have been.

Unearned Increment

Rent has also been described as an unearned income. It is said that the owner of land has net made any special effort to create land and all carning is, therefore, unearned. When, for instance, urbanization takes place and towns expand, land till then regarded as useless, begins to earn rent. This increase in their earning from zero upwards is uncarned. It was Henry George who gave this explanation in his book *Progress and Poverty*. His theory offers an unnoticed explanation of rent. But the modern economists do not accept this in toto as this theory ignores the usage of land, and also fails to explain the emergence of rent under normal circumstances, when there may be no unearned incomes available from land.

Transfer Earnings

The recent explanation of rent is that of transfer earnings. This has become quite popular. It is recognized that the means at our disposal are limited and scarce. Our effort is to put them to the best possible use, as they are being used in several way.. The agents of production tend to be used in the most productive way. These higher earnings attract the factors of production which transfer themselves to that use which may be more remunerative. These are transfer earnings which accrue from the best alternative use. In agriculture, the peasant puts his land to the best possible use; therefore, rent is defined as the excess of what one use gets over another. Reflecting more deeply, we find that specific lands (which can only be used for one purpose) will not get any rent, because they cannot be transferred to any other use. But normally a landlord takes all the enterprises and crops into consideration and on the basis of their comparative yields fixes rent. Transfer earnings have, therefore, some meaning about them. The explanation is not only confined specifically to rent, but can be extended to other factors of production. In fact, this theory does not claim to be applicable only to land.

The Modern Theory

The modern economists are of the view that there need not be a separate theory of rent. They argue that the essential factors in the determination of rent are the relative scarcities of land and its gradations. Fundamentally speaking, however, rent is paid because land is scarce in relation to the demand for it. We can have several grades of land; all these grades of land taken together are scarce in relation to the demand for them—hence rent. This scarcity of land is not original but only derived in the sense that land is productive and is wanted for its productivity. Therefore (the argument goes on) rent need not be placed in a special class, but should be thought as a payment for a scarcity just as these are payments for other factors. No distinction between rent and other payments need be made. Rent also cwes its origin to the marginal productivity of land.

One question remains. What would happen to rent under conditions of progress? Progress means advance in production methods, changes in population, and greater welfare. First, better technique and improved productivity would go to economize in respect of the demand for land. Less land will be wanted. Therefore, rents may decline. Again, as the means of transport improve, rents arising out of situation will be evened out. In regard to population, it may rise or it may fall under dynamic conditions. If population expands, there is greater demand for land to be brought under the plough. Even if it declines, greater welfare will mean better housing and recreational facilities. In other case, therefore, rent will be high. Hence on balance progress will mean a greater demand for land and rise in rent.

In conclusion, it may be pointed out that the theories of Ricardo

and Marshall are not unexceptional. Transfer earnings theory is an improvement, but not a complete explanation. Similarly, rent can be regarded as an unearned surplus but it need not always be so. And the modern view is that there may not be a separate theory of rent because the basic facts in its determination are scarcity and productivity as in respect of all other agents of production. Still, rent is of great importance in agriculture as it is the most important component of agricultural costs.

CHAPTER TEN

WAGES AND AGRICULTURE

WAGES are the payments to people who work for others. They are the remuneration for human labour contracted for work with an economic motive. This human effort may be physical or mental. Payments to labourers who work on the farm or in the garden or do any other kind of work for which payment is made for the actual time taken for doing the work are generally called wages. Wages are customarily limited to payment by the day, the week, the task or piece. In agriculture, wages may even be for the season. There is no sharp dividing line between salary and wages. They may be distinguished by the nature and the type of work. Few salary receivers are held to a specified numbers of hours when paid, whereas the wage earner is seldom allowed much time off without a deduction.

Wages and Profit

Wages normally involve physical exertion while profits do not. There can, however, be examples of wage earners not doing any physical exertion. A supervisor on the farm who keeps accountants and supervises the work of others may sit all day or move about quite leisurely and do nothing that may be counted as physical labour. Profits may also be distinguished from wages in that while wages, rent, and interest are all fixed before hand, profits are more or less of a residual nature. There is a minimum below which wages, rent, or interest may not fall. So long as the worker is employed, his wages cannot fall to zero. Profits, on the other hand, may be zero or even a minus sometime. The entrepreneur may sometimes lose even his capital, rather than earn any profits.

Real and Nominal Wages

Wages are of two kinds—real or nominal. Adam Smith distinguished between the two as follows: "The real wages of labour may be said to consist of the quantity of the necessaries and conveniences that are given for it; its nominal wages in the quantity of money.... The labourer is 1ich or poor, is well or ill-rewarded, in proportion to the real, not to the nominal price of his labour."

Determinants of Real Wages

Real wages, as distinct from nominal wages, depend upon a number of factors.

Regularity of work. A person employed on a higher wage but not getting regular employment may be worse than one who earns a lower wage but has regular employment. The total wage in the former case has actually to be spread over the unemployed period also to get a really correct idea of the real wage.

Risks in the job. In a job which is risky and which exposes the worker's life to dangers, the real wage is less than the nominal. The working life of the labourer may be shortened. Thus the average earnings would work out at much less than the earnings of those who are working in safer vocations and are able to enjoy a longer span of life.

Purchasing power of money. The labourer is actually concerned with the quantity of "necessaries and conveniences" which his wage can buy fcr him. If wages remain the same but prices rise, the same money will buy fewer services and goods. In a place where the cost of living is higher than at another place, an identical money income buys less of necessaries and conveniences. In both these examples the real wage is reduced.

Current trade expenses. Real income is the net after the deduction of expenses of the trade. If the labourer has to work with his own tools or keep with him some helpers or pay some one else for securing him the job, all these expenses will have to be deducted from his gross wages.

Services in kind. Some workers get certain perquisites in kind. Real wages include all such facilities, *i.e.* free house and rations at a concessional rate. Actually, the economic satisfaction of the labourer from these kind of payments has to be determined in estimating his real wages.

Prospects of extra earnings. With certain jobs, it is possible

to undertake some additional part-time work. A school teacher undertakes private tuitions. A gardner may undertake part-time gardening during his leisure. The extra earnings need to be reckoned in calculating the real wage.

Conditions of work. The conditions of work, *i.e.* hours of work, recreational, and other educational facilities, determine the satisfaction of the worker. Working under unhealthy conditions affects his health adversely.

In the ultimate analysis, the personality of the worker is his most important asset. It is the psychological satisfaction that is important for the individual. As personalities differ from individual to individual, real wages also vary widely from man to man even when there is no divergence in the nominal wages.

Wage Theories

The object of various wage theories is to find an explanation of how wages are determined under widely different conditions. The principal wage theories advanced are described below.

Subsistence Theory. David Ricardo stated as early as 1817 that labour, like all other things which are purchased and sold and which may be increased or diminished in quantity, has its natural (normal) and its market price. The natural price of labour is that price which is necessary to enable labourers, one with another, to subsist and to perpetuate their race without either increase or diminution.

The theory was originally propounded by the Physiocrats who, having seen the conditions of French labourers living on bare subsitance, concluded that nature itself was working out wages at the subsistence level. Clearly the theory was more or less an exposition of the Malthusian principle of population. It meant that with a rise in real wages population would increase and force the wages down. Once wages fall, the very subsistence of the labourers would be threatened. This would lead to more deaths and fewer births. Population would be controlled. This would, in turn, force the wages upward till they lowered to the subsistence level.

Considered in the rigid form in which it was explained by

Ricardo, the theory meant that the price of labour estimated in terms of food and necessaries is absolutely fixed. The socialists called it the "iron or brazen" law which they claimed would always prevail under capitalism. It was on this basis that they induced labour to join socialism and overthrow capitalism, although they failed to explain how the law would not operate under socialism.

The obvious flaw of this wage theory is that population does not change with changes in wage rates. The movements of population in relation to growth is the opposite of what is implied in this theory. Experience has it that a higher standard of living has not necessarily resulted in a higher growth rate of population. This theory pays no heed to the working efficiency of the labourer which may result in increased production and a bigger share for the labourer. It fails to explain why wages differ with labourers even at the same place and at the same time. The primary defect of this theory is that it does not take productivity into consideration. It ignores the demand side and takes into account only labour supply.

Wage Fund Theory. Mill theorized that wages were dependent upon what the employers arbitrarily set apart for payment to labourers. He thought that there is an amount of wealth set apart (by economic forces) for the payment of wages. The ratio between the aggregate capital and the portion thus devoted to the payment of wages is not necessarily the same in different countries at the same time or in the same country at different times. The ratio may vary with the conditions of industry and the habits of people; but at any given time the amount of the wage-fund under the conditions existing is fixed within the amount of total capital.

The wage fund being fixed, the theory implies that the wages can be increased only by decreasing the number of workers. Labour movements or labour unions could hardly do anything in the matter. The worth of the work done by the labourer does not have any influence on the wage he carns. It might be argued that the initial allocation of the capital which constituted the wage fund might have been the result of profits earned representing in another sense the efficiency of labour. Even this may not be true. First, it is not necessary for the producer to keep the whole of this as wage fund. The determination of "wage fund" as conceived by Mill is more or less arbitrary and depends upon the whims of the entrepreneur. Secondly, even if he reserves the whole of it, that generation does not get any benefit out of it. Efficiency thus has little direct bearing on the determination of wages.

The whole idea of determining the wage fund first and the wage later on does not appear logical. The process should actually be the other way round. The wage of a labourer may be pushed up as a result of competition between the employers or due to a number of other reasons. This theory fails to account for this. The theory in its crudest form comes quite near to the subsistence theory and was rejected even by Mill later.

Standard of Living Theory. Some of the economists met the objections raised above in the "standard of living" theory. Wages are said to be determined by the standard of living of the labourers. The theory removes the rigidity of the "iron law". Here, since the labourer is getting more than his mere subsistence, he can save and is thus in a bargaining position. Again, since he is in a position to maintain his standard—which might mean a level at which he can provide education and recreation to his family—there is a possibility of his improving efficiency. The theory suggests that wages are determined by efficiency, although indirectly. This is, however, not true.

Wages cannot depend solely upon the standard of living. An employer will not offer high wages to a labourer simply because his standard of living is high although his efficiency may be low. It would then be difficult to say whether wages determine the standard of living or the standard of living determines wages.

Again, if the standard of living determines wages, wages should not change so frequently. A standard once established should continue for some time at that very level. But in fact the wages of a person may very well fluctuate within shorter intervals, although his standard of living remains unchanged.

Residual Claimant Theory. Walker who was a staunch critic of the wage fund theory pointed out that the products of industry are to be divided into four parts—rent, interests, profits, and wages. Rent, interest, and profits, according to him, are fixed by economic considerations independent of the products of industry. Labour

alone is then left as the residual claimant on the products. He pointed out that if a piece of land is producing 100 units of a certain commodity and the output of marginal land is 50 units, then the remaining 50 units go as rent to the landlord. Similarly, interest should be high enough to induce the wealthy to save and invest it. As for profits, just as there is a marginal land so is there a marginal entrepreneur. All these three claimants would then have their shares determined without any reference to the end product. The balance out of the total product is the portion which goes to labour.

This theory is also subject to a serious charge in the sense that there is nothing special in labour to be declared as the residual product. The share of any three of the four production factors could be considered as having been determined by the margin and the fourth one could be taken as the residual claimant.

While the earlier theories were rigid about the share of labour, this theory is rigid about the share of the other three factors—land, capital, and organizations: Any changes in output will keep the share of factors (other than labour) as constant. This has hardly any sense of reality in the present day world. The theory ignores the part which the supply of labour plays in determining wages.

The Marginal Productivity Theory. Everyday experience shows. that, except where custom, governmental rules, or any other extraneous factors interfere, an able-bodied and alert person commands wages higher than an inefficient one. This indicates a direct relationship between the value of a labourer's output and his wages. There would then be different wage rates for different occupations under different conditions. This is explained by the marginal productivity theory. According to it, wages are determined by the marginal productivity of labour and are equal to it at the point of equilibrium. The point of equilibrium is said to be reached when supply equals demand. The buyer of labour at such point gets an amount of benefit from its use equal to the price that he pays for it and the labourer gets a remuncration sufficient to compensate him for his sacrifices. The demand for labour is based on its productivity. Just as the price of a commodity tends to equal its maiginal utility, the price of labour tends to equal its marginal productivity.

Like marginal utility, marginal productivity means the addition to the total output of a factory when one more worker is eng-Suppose that an employer gets a total output worth aged. Rs. 2,000 when he engages 50 workers. If his output increases to Rs. 2,050 by hiring another worker, the difference of Rs. 50 between the outputs measures the marginal productivity of the twenty-first worker. This, in other words, is the utility of this last worker, measured in terms of output. Money wages would tend to be equal to the marginal productivity of labour determined in this way. If the actual wages are lower than this amount, the employers will gain by engaging more workers. They will be eager to engage more men. The demand for labour will increase and the rates of wages will go up. If, on the other hand, the actual wages are higher than the marginal productivity, the employer loses by engaging the additional worker. His demand for labour will fall off and wages decrease.

The supply of labour depends on the number of men willing to work at a particular rate of wages. If the supply increases, wages tend to fall and vice versa. When two workers run after one employer, wages fall, but when two employers run after one worker wages rise. Wages would thus depend upon the interaction of the demand for and supply of labour.

In agriculture, wages are determined more or less by custom because changes in demand and supply are not minutely assessed by farmers who pay according to their set traditions and rules. Still, in actual practice wages tend to conform to marginal productivity of labour. But the possibility of under payment and exploitation is greater in agriculture than the industry for agricultural labour is tied to land, and is not so mobile as industrial labour usually is. Moreover, agricultural labour is unskilled, and above all not organized in any trade unions.

CHAPTER ELEVEN

INTEREST AND PROFITS

INTEREST may be defined as the payment made for the use of capital. It consists of the following elements: (1) Payments by the borrowers to the creditors purely for the use of capital; (2) payments for the risks undertaken by the lender; (3) payments for the inconveniences undertaken by the lender; and (4) payments for the incidental services rendered by the lender, *e.g.* the keeping of accounts.

This is gross interest. The price paid purely for the use of capital, (*i.e.* the first element of the gross interest) is net interest. It is evident that the rate of interest would be different in different cases in the same market according to the variations in the four elements of which it is composed. For example, a loan given on personal security often involves greater risks and, therefore, the rate of interest may be higher. Similarly, the higher the cost of incidental services, the higher is the rate of interest. While the gross rate of interest may differ, there would be no difference in the net rate of interest because that represents only the price paid for the use of capital.

Theories of Interest

From time to time the economists have attempted answers to several questions. What is interest due to? What is interest a payment for? Generally, interest is said to be due to the productivity of capital, which really means the price a person is willing to offer for the capital he needs; this price obviously depends on what he is going to earn from the capital so acquired. This answer reflects more the demand price of capital. But there is also another side to the transaction. Why should a person lend money to another. This is explained in terms of time preference, *i.e.* the supply side of the transaction. Interest has also been described as a payment for waiting, or for abstinence.¹

Interest must be defined as the earning of capital; this, like any other factor, is determined by its marginal productivity. This fact helps us to understand the nature of interest and the mechanism of determining its rate. Whether an individual borrower uses the loan for investment or consumption makes no difference, the emphasis is on the fact that another person could have used as capital. Productivity of capital depends on technique of it production and relationship between price of goods produced and cost of other factors involved in their production. The marginal productivity is always greater than zero because the supply of capital is scarce. Scarcity of capital, like that of any other factor, is to be understood in the context of its productivity. It is regarded as a scarce factor of production when it is not possible to reduce its quantity in use together with other factors² without decreasing the amount that is produced. In other words, it is scarce so long as it has some (positive) marginal productivity. It follows from this that the only plausible explanation is that interest is due to, or because of, the productivity of capital. This statement might seem to lay emphasis on the demand or productivity side of capital and to ignore the forces on the side of supply. However, it is not so. The supply aspect of capital is implicit in the notion of marginal productivity. The marginal productivity of capital depends on the amount of capital in use, and the amount in use is determined not only by the considerations of productivity but also by that of the ease with which the supply can be increased. So the marginal productivity theory does attach importance to the forces of supply as well as demand.

¹ Properly understood, waiting and abstinence mean the same thing. It is strange, therefore, that economists should have quarrelled on this point. Marshall prefers the word *waiting* while Davenport considers the word *abstinence* to be the better of the two. For him, however, neither *waiting* nor *abstinence* is a satisfactory word. But Devenport in his zeal for originality has unnecessarily created confusion here. To wait means, as is shown later in the text, not to consume, and not to consume means to abstain.

² In other words, a factor is scarce when its marginal utility (in our example productivity) is greater than zero. In modern phraseology, we could say that as far as considerations of production go, a factor is not scarce when its elasticity of substitution is zero. Mrs. Rabinson and J.R. Hicks were the first to speak of elasticity of substitution.

Instead of saying that interest is due to the marginal productivity of capital being greater than zero, one could as well say that interest is due to scarcity of capital in the sense that it requires some effort to produce it. Had the production or creation of capital required no effort, the use of capital for purposes of production would have been carried on to an extent where its marginal productivity had dwindled to zero. Thus we can explain the phenomenon of interest in another way by saying that interest is due to the effort or abstinence needed in effecting savings, *i.e.* the creation of capital. This effort or abstinence in other words is waiting, *i.e.* not spending the income but converting it into savings for use in the future.

Thus, the phenomenon of interest can be looked at from three angles. First, interest appears as due to and determined by the marginal productivity of capital. Second, it appears to be due to and consequently determined by the abstinence or effort that the creation of capital necessitates. Third, it appears to be a price for waiting. As already explained, these are not three different but complementary explanations of the phenomenon of interest.

The idea of time preference is implicit in the phrase "cost of waiting." Waiting is a cost item only because man is so constituted mentally that he prefers the present to the future enjoyment of the same magnitude. It is necessary to note carefully that what a man prefers is not necessarily present goods to future goods. but present enjoyment to future enjoyment. "A final psychic income of a given intensity or magnitude has greater attractiveness in the present than in a future period." It is the damage that a distant enjoyment suffers through its journey over time, as it were, that is the true cost of waiting. Man's mind may fully measure the intensity of distant enjoyment but the measure is invariably discounted and makes a feebler appeal than an equal measure of present or immediate enjoyment. Man prefers, in other words, the nearer to the farther. His preference for one over the other is a mere time-preference and this timepreference makes waiting a disagreeable job, a cost. In an act of saving or waiting, therefore, the future enjoyment in itself must be greater by at least the rate at which the human mind discounts the future. This rate at which future enjoyments are discounted varies with the provision already made for the future. But command over consumption goods fructified by the process of saving, in more familiar notion, capital is productive, and this productivity diminishes with the increase in the quantity of capital. Hence, as stated above, the creation of capital stops when the marginal productivity equals the marginal cost of waiting. It could also be expressed by saying that it equals the rate of time preference.

The Modern Explanation

The most important modern explanation of interest is given by Keynes. In the first instance he criticized the other theories, mainly the classical. He pointed out that productivity has nothing to do with interest, which could not be explained by psychology. He refuted the contention that interest is a payment for savings; some people save and still do not get any interest, while others save their surpluses but do not make any conscious efforts to do so. He suggested that interest should be explained in monetary terms alone. According to him, the rate of interest is determined by the liquidity preference of money. The liquidity preference is the preference to hold liquid cash. There are several motives for holding cash; these are the transaction, the precautionary, the speculative, or the investment motives. Without going into the details of these motives we may agree with Keynes that the rate of interest varies inversely with liquidity preference. The higher the liquidity preference, the lower the rate of interest and vice versa. From another viewpoint, if liquidity preference is high, the desire to have more loans would be less intense. Hence the rate of interest may be low and vice versa.

Keynes has also not been spared by economists who believe that the rate of interest is really determined by a demand for investible funds. This theory has been put forward by Professor Bains who thinks that the rate of interest is determined for the equilibrium between the demand and supply of loanable and investable funds. Supply grows from liquid funds available at a certain period, while demand arises from investments.

All these theories have been given to provide a background to

the agricultural setting. The farmer is not interested in the theoretical framework. But the agricultural economist is: hence it is proper to visualise how interest is actually determined in the sphere of agriculture.

Interest in Agriculture

In agriculture the rate of interest is the gross rate and not the net rate as visualized by theoreticians. Time preference is important in rural areas, so also are personal factors. Longer the time, higher the rate of interest. The more credit-worthy the borrower. greater the facilities he enjoys in negotiating a loan. In our opinion the demand and supply explanation does to a great extent account for the very high rate of interest prevailing in the agricultural sector. In fact the loanable funds theory put forward by Professor Bains is also another version of the demand and supply theory which could be stretched to apply to the rural sector. Analyzing further. we find that money is in demand only in the busy season; hence the rate of interest is a seasonal phenomenon. The element of risk is also quite important, for agriculture is a hazardous venture and the farmer incurs a great risk. Another factor is the lack of knowledge on the part of the farmer who is always attached to the traditional moneylender. The result is a high rate of interest. Partial and instalment repayment also raise interest rate. Another cause of the high rate of interest is the restrictions under credit and the debt legislation. Several formalities have to be observed and several types of accounts kept under the legislation, with the result that real interest rates rise, although the nominal one may be low. All sorts of malpractices creep in.

The forces of demand for money are seasonal and inelastic for the farmer. His resources are limited, savings are meagre, and borrowings have to be frequently resorted to. His social status is even low while the demand for capital is seasonal and highly elastic. Some of his expenditure is also unproductive, like that on marriages, funerals, and social ceremonies. No wonder then that the interest rate remains high in rural areas.

As regards agricultural investments, even for productive enterprises the flow of funds is insufficient in the underdeveloped areas, for the moneylenders do not find it convenient or safe to settle in rural areas and go on lending to agriculturists. And then there is a non-capitalistic structure of the farmer's business, with the result that money is borrowed whenever required and hence high rates of interest prevail. Still another point is the frequency of long-term loans in agriculture. The result is obvious, rate of interest is high. All things said and considered, therefore, the rate of interest in agriculture is very high.

In conclusion we may, however, point out that while the rate of interest remains high in agriculture, there is also a bright spot. New institutional sources of credit are now coming to the fore, *e.g.* co-operative agencies and commercial banks. The nationalisation of 14 major banks is actually a new chapter in rural credit. The rate of interest may, therefore, decline in the long run. With more literate and progressive farmers, the demand for unproductive loans may decrease. Then there is the emergence of agriculture proper which promises to bring down interest rates. And above all, the greater interest of the state in agriculture is significant especially in the underdeveloped economies. This also indicates that the rate of interest may go down.

Profits in Agriculture

Profits are usually regarded as the difference between income and expenditure or between costs and receipts. The more efficient farmers and entrepreneurs get larger profits while the others incur even losses.

It is difficult to define profits correctly. In the first instance, profit is only a negative payment. Also profits cannot be said to be the price of enterprise because the entrepreneur supplies himself while nobody visibly demands him. In the case of the farmer, the difficulty is all the greater because it is not possible to judge his actual expenses and costs. Most farmers do not keep accounts. Farmer's wages are also mixed up in the profits that he earns. He gets gross profits which consist of interest on his capital, wages for his labour, rent for his land, and pure profits.

The farmer entrepreneur is different from other entrepreneurs as the farming business is distinct from other business. There are natural and weather hazards in farming. Secondly, farming is mostly scasonal, and therefore uncertain. Thirdly, the unit of enterprise is small; only in the case of large farmers the element of monopoly enters. Fourthly, there is greater scope for conjunctural gains or losses in farming. And, lastly, the farmer entrepreneut is not as enlightened as his industrial counterpart, is.

Theories of Profits

Just as there is a rate of wages, or a rate of interest, there cannot be said to be a rate of profit. Profits are a highly personal payments and differ as between two persons. Therefore, there cannot be a general rate of profit. Profits also vary from enterprise to enterprise; this is more true of farming than of any other enterprise because no two farms or their organizations are similar.

Theoretically speaking, the oldest explanation of profits is given by F.B. Hawley who termed profits as the reward for risk-bearing. This explanation was accepted for quite some time. But then insurance developed and the element of risk was covered. Therefore, this theory was no longer tenable. Another explanation was given by J. B. Clark who described profits as the result of dynamic factors. He said that profits accrue under progress. Therefore, they are the payment for growth. But he could not explain the negative element in profits, *i.e.* losses. The next theory was enumerated by Professor Knight who made a distinction between foreseeable and unforeseeable risks. The foreseeable risks can be insured but the unforesceable ones (which he termed as uncertainties) could not be covered by insurance. Therefore, profit is regarded as the payment for uncertainty-bearing. This factor was introduced for the first time in economic analysis. Critics object to its elevation as an independent factor. Still, the theory does have an element of truth.

In our opinion, however, profits may be the residue that remains after all payments had been made. In this aspect, therefore, the Residual Claimant Theory enunciated by Walker may be said to be more applicable to agriculture than any other explanation. In our opinion the farmer is residual claimant for he has first to meet all his obligations and then be content with whatever remains after all payments have been made.

Profits and Progress

Under progress, profits appear to be going down. This is so because of the emergence of several more firms and enterprises than ever before. In agriculture, however, the effort is to achieve parity with industry. This means that agricultural profits may rise to the levels of industrial profits in course of time. But agriculture in most countries has so far remained static. With the progress and modernization of agriculture, it is possible that profits may rise. With better education, and the adoption of scientific methods, profits from agricultural enterprises are likely to improve. The result, therefore, is that agricultural profits may rise. Hence the immediate impact of progress on profits in agriculture is to raise them.

In conclusion, it appears that profits should be considered as an important incentive to economic activity. In fact, this view has implicitly dominated economic analysis for long. In agriculture the situation is a little different. In larger part of the world, agriculture is a way of living and not a business. Hence profits may not be playing that important role in farming as they do in business or in industry. Still, it appears that profits may tend to stabilize agriculture; stability is the foundation of progress in farming.

We had taken profits and interests together, because in the modern analysis it is customary to look at these together. Keynes regarded profits as a function of interest. High rate of interest could only be paid when there are high profits according to him. In agriculture also, if the peasant expects good harvest and good income from his operations he may go in for the borrowed capital even at high rate of interest. But if he does not expect to earn much more or reap good profit from his enterprise he may not be prepared to pay a high rate of interest. Hence in agriculture, too, interest and profits have a close relation.

CHAPTER TWELVE

MARKETING OF FARM PRODUCTS

THE TERM "marketing" commonly means just selling and buying. Some are of the opinion that once the farmer has sold his farm produce the function of agricultural marketing comes to an end. In economic thinking, marketing is quite a complex activity which is becoming more complex with economic and technical progress. Marketing begins just where the physical production of farm commodities ends, *i.e.* after the produce has been gathered, threshed, winnowed, and brought from the barn. It indicates all the rest of the processes and services, until the produce is finally in the hands of the consumer. It may be defined as the sum total of economic activities which are undertaken to help the movement of the produce from the point of production to the point of consumption.

Some may ask whether processing of milk into butter is to be treated under production or under "marketing", if production ceases with milk. The answer to this depends on what the farmer is producing for sale; whether he is producing only milk or butter or both. The theoretical basis for differentiating production and marketing is what the enterprise aims at producing. In economic terminology, however, addition of utility in any form constitutes production. In this sense marketing services do constitute production.

Marketing can even otherwise be considered as a productive function because it adds place or time utilities to salable commodities. Marketing comprises services in distribution from the farmer on one end to the retailer at the other end, and a longer or shorter line of middlemen in between. We are interested in marketing as a productive activity from the point of view of effecting conomies in the selling costs to the benefit of the producer as well as the consumer. We are also interested in the marketing problems from the standpoint of establishing a just division of consumer's rupee among those who participate in all the work involved in production and delivering the product at a point where a consumer gets it.

Marketing is, defined "as the performance of business activities that direct the flow of goods and services from the producer to the consumer so as to reach the consumer at the time, place, and in the form he desires and at a price he is willing to pay."¹ It includes preparation for the market such as cleaning, grading, processing, bagging or packing; assembling, haulage, storage, sale services, *i.e.* bringing the sellers and buyers together either in person or through other means of contact, *e.g.* correspondence and delegation of powers of sale and purchase to commission agents, settlement of prices, weighing, loading and unloading, market intelligence, advertisement, financing, insurance against losses during storage, and arranging of actual site for marketing.

Special Features of Agricultural Marketing

By its very nature, agricultural production has a number of peculiarities which influence the marketing of farm produce. Production being seasonal, commodities are not available throughout the year but during certain periods only. This emphasizes the role of storage over long periods and of financial arrangements during storage. A number of farm products are perishable and require special care in handling, transport, and storage. These products must be consumed within a certain period. The producers are scattered over a large area and the individual units of production are small. This places a special strain on services such as haulage, financing, and market information. Transport facilities assume considerable significance in the agricultural marketing development and in determining the pattern of agriculture. Lastly, the volume of production and, therefore, the marketable surplus is uncertain and depends somewhat on natural factors. This makes it difficult to judge the volume of farm produce that marketing services would be required to handle after a crop season. Price as a mechanism for bringing an equilibrium between production and consumption is not very effective in agriculture, specially in the short run, more so in the case of perishable products.

¹ R.L. Kohls, Marketing of Agricultural Products, p. 7.

Growth of Marketing

Marketing has direct relation with economic progress. The more varied is the economic activity and the larger is its volume. the greater is the need for exchange. The progress in marketing is determined by the economic progress of a community or country at a point of time. In backward countries, having self-sufficient village economies, there is hardly any marketing in the sense the term marketing denotes in advanced countries. The needs of the individual, particularly the farmer, are limited and are mostly met with from his own productive activity on the farm. Under these circumstances, he would poduce only what he needs for his and his family's consumption. Whatever little he needs from outside, he may manage to procure through barter with his neighbour or any other person in need of his produce. Under barter a shoe-maker or a weaver may have a direct relation and a regular arrangement with the producer of grain or milk to exchange his goods with what he needs for his direct consumption-both parties in the bargain producing surplus goods to the specific needs of each other whom they know intimately. In case such a close and direct relation between the two parties is not possible, they may meet at a regular weekly, fortnightly or even monthly "hats" or market places.

Specialization begins with economic progress. There is soon a realization that one individual is better adapted to a certain kind of economic activity. Marketing problems arise as a result of specialization. The economic organisation of family and village on the basis of self-sufficiency is weakened. A village or a larger area than a village may specialize in the prodution of a particular commodity and may depend on outside assistance for its other needs. A group of intermediarics specialized in the job of taking the desired hauls appears on the scene and the marketing organisation emerges.

Once people do not have to produce all their individual basic needs, they are enabled to leave the land and congregate in larger groups; thus introducing the process of urbanization. First of all such urban concentration may be on the banks of rivers, so that goods can be moved conveniently. Further changes take place with the development of roads, railways and other means of transport. Mass production starts, creating impersonal relations between the factories and the ultimate consumers. The greater the distance between the producer and the consumer, the more complex the marketing. A new marketing system has got to be evolved under the circumstances.

Marketing Systems

The simplest marketing system, as discussed in the previous section, is one in which the surplus of one producer serves the needs of the other, both of whom are in direct contact with each other. The producer in this system combines within himself the function of the retailer and wholesaler. Such an arrangement is naturally defective and is likely to be resisted in any advanced economy by the producer as well as the consumer, who may not like to subject themselves to such an interdependence on each other. The nature of the marketing system also depends upon the types of the commodities entering the market. Dairy products, which are perishable and cannot be transported over long distances, would not enter the market in large quantities. Possibilities of adulteration are great. There may be no intermediaries or only a few, and the simple system of direct supply could still operate in marketing these products. Technical progress in dairying and cold storage facilities have changed the problems of their marketing.

The demand for farm products, like cereals, is fairly regular throughout the year, but their production is seasonal. Farmers are scattered over a large area, quite often away from the urban centres, where their products are in demand. The farmer can only partially control production. Commodities vary in types and qualities.

Some one must estimate where, when and in what form consumers require farm products. How much will they buy at various prices. Some one must also find out how much is the availability and at what time. One must arrange to offer them at the right time and in the required form to those consumers who pay the best price in relation to the cost of supplying them.

A daily market service is convenient to both the farmer and the consumer for most farm products. In the case of milch and draught animals, there is no need of daily markets. A market once a year

or at shorter intervals could serve the purpose. A farmer purchases them once a while. For meat and eggs, a daily market service is necessary as for cercals and other foodgrains. The advances in means of transport and storage are reducing the differences in the marketing arrangements of perishable and non-perishable farm products.

Thus from a very simple barter system, marketing organizations suited to particular commodities have been evolved during economic growth. In the West, quite a sum is spent on marketing research, packing and display of farm products. Several jobs normally performed by housewives have been taken over by the marketing organization, ϵ .g. sale of bread in slices and most foods in cooked form.

In India, one can still find agricultural marketing in nearly all its stages of development from a direct supply of farm products by the farmer to the consumer, to the product passing through a multiplicity of hands to the consumer and from barter to cash sales involving bank credit and foreign exchange. Similarly, the methods of storage vary from indigenous mud pots, straw lined floors, etc, to concrete godowns, high-tower silos and modern cold storages. Still, the marketing of agricultural produce in India leaves much to be desired.

Marketing Services

With the marketing system getting more complex, there arises the need for a number of new services. Marketing services can be grouped into nine bread headings: (1) assembling; (2) financing and risk bearing; (3) grading and standardization; (4) storing; (5) packaging; (6) processing; (7) transporting; (8) market intelligence; and (9) selling.

Assembling. Collection of produce for sale in mandis or larger markets is known as assembling. The larger the quantity of a commodity of a given type and quality, the wider the market it commands. There is advertising value in volume. The importance of assembling to serve as regular feeders to the consuming centres is fairly obvious where such centres are located at a distance. Even when the distance is short, assembling is necessary, and may be carried in one or several stages. The sale of milk in a town may require only one assembling point from the producers in the vicinity; but sale of cotton in an export market may need assembling from the village to the market, from the primary market to the wholesale market and from there to the shipping centre.

Various agencies engaged in assembling are the farmer, the village merchant, agriculturist and non-agriculturist moneylenders, itinerant dealers and in some areas (of well established cash crops) larger units, *e.g.* agents of wholesale traders or industrial concerns. Some farmers buy produce from their neighbours for sale along with their produce in the market. Some farmers with carts take up transport business to earn a living from the deployment of their bullocks and cart. They purchase the produce if the demand for hiring their carts is not sufficient. The means of transport in use in various regions comprise head-loads, pack animals, bullocks, donkeys, mules, camels, goats, pack ponies, bullock-carts and trucks. With the progress in road development and improved linking of villages with towns and markets, the motor lorry, being quicker and cheaper, has made considerable inroads.

Financing and Risk Bearing. Just like any other productive activity, marketing also involves financing. Besides the regular financial commitments involved in the process of marketing, the wholesaler may, at times, even advance finances to the producer while the commodity is in production. This is more true in agriculture where the producer is normally a person with small means. Finance is needed at every stage from harvesting of the crop to its final disposal to the ultimate consumer. The need for financing in terms of duration may be considered as proportionate to the length of time the whole process of marketing takes. To avoid the glut of farm produce in the post-harvest months and to even out the supplies through the year, but at the same time to ensure that the profits due to changes in price levels are shared by the farmers as well, there is a growing emphasis on storage of produce over a longer period, as far as possible, on farmers' account. This raises the requirements of marketing finance.

Practically in every system of marketing some one must bear the risks arising out of changes in the market price, deterioration in goods, loss by fire and other damages. Whether assumed by the farmer, the intermediary or the final consumer, some compensation is due to one who undertakes such a responsibility. Various kinds of risks may be typified, e.g. (i) destruction from natural hazards, and (ii) deterioration in value.

Destruction. A commodity while in the possession of one intermediary may be destroyed by fire or some other accident. Big firms would always insure against such losses. Commodities like cotton which can catch fire easily are being invariably insured against fire. Finance in large or small amounts are needed to cover such risks.

Deterioration in Value. This is of several kinds: (a) The quality may deteriorate due to careless storage and handling. Such losses are high in the case of perishable commodities, *e.g.* fruits and vegetables. (b) Changes in consumer's perference may also result in reducing the value. Such losses are not common in agriculture. Rapid preference shifts do not take place in foods and like commodities. (c) Price Changes--It is probably in this area where agricultural marketing agencies face the greatest risks. A number of devices are adopted to shift the incidence of this risk from one person or firm to another. Forward selling, delivery at destination, etc., are some of the examples.

In big business, new financiers have also appeared; they specialize in advancing finances to those buyers who do not have sufficient money of their own to buy the product.

Grading. Grading means classifying a particular farm produce according to certain attributes or marketing qualities into various classes or grades. These quality attributes are fixed in consultation with trade interests officially or by traders themselves through their associations and even by individual firms for guidance in their purchases.

A set of factors that determine quality are well known in the case of many important products, but a systematic effort is required to organize these factors into definite grades and standards. The factors of quality for the following commodities may be summarized here.

Cotton. staple length; ginning percentage; cleanliness and colour; softness; presence of foreign matter; and dampness.

Groundnut. uniformity of pods with regard to size; oil per-

centage; mixture of varieties; dryness; foreign matter; and colour of the pods.

Fruits. size; symmetry of form; colour; ripeness; and damage.

Tobacco. colour; strength; aroma; texture and thickness of leaf; sweetness and smoothness in smoking; burning quality; dryness; and damage.

The determination of quality presents a number of problems. What can be the possible criteria for various grades of quality? How many grades can there be? How uniformly interpreted and widely accepted are the standards for grading from one area to another or from one grade to another? What terminology should be used? These problems vary from commodity to commodity.

Advantages of Grading. Once the various problems involved in the process of grading and standardization are overcome, the advantages accruing therefrom are numerous.

(1) Grading is done through the use of recognised standards. Without such uniform standards, we have ne good basis for buying and selling, no common language for buyer and seller and no standard of quality upon which values may be fixed.

(2) Grading ensures uniformity of quality. Both the buyers and sellers know what they are bargaining for. The buyer is sure of the quality of produce that he is paying for.

(3) Sale becomes possible by description and price quotations become more meaningful. A person conversant with a particular quality can enter into the bargain, even from a long distance without having seen the sample.

(4) The transportation charges, even on samples, can be saved in the case of well-established grades. Time is saved in completing the transaction.

(5) Even if the grade of a particular commodity is not so clearly understood, sampling would help to eliminate the physical inspection of every package. Examination of one fruit crate may thus be sufficient to settle the bargain for the whole truck load. Worthless produce, dirt and foreign matter are eliminated at the earliest stage thus reducing unnecessary handling and transportation costs. Economy is also effected by reducing spoilage. For certain products such as fruits packing is made easy and more fruits of uniform sizes can be packed per unit area resulting in lower packing costs.

(6) Generally grading leads to increase in demand. Once the consumer is sure of the quality he is paying for he would like to meet his full demand. Buffalo ghee (butter fat) in India, offers the most apt illustration. In the absence of a standard quality, one who would normally like to use buffalo ghee and has adequate purchasing capacity to meet his normal requirements of it, shifts to vegetable ghee only because he is not sure that he is getting the genuine animal butter fat for the price paid.

(7) Grading helps to widen market. This becomes possible because of advertisements and good reputation for the quality of the goods.

(8) Price of the superior article is protected from the depressing influence of the inferior one.

(9) Financing of the marketed products is facilitated. The value of a graded product can easily be determined and loans advanced.

(10) Facilities for pooling or intermingling of products. Under the present day system of bulk handling without bags, commodities of one quality can be pooled. Such pooling would otherwise be impossible without loss in value.

(11) Grading encourages the producers to improve the quality of their produce as quite often the difference in the price of different grades is substantial and leaves the farmer producing better quality with a good margin. The introduction of grading in cocoa raised quality of the cocoa produced significantly. Now more than 90 per cent of the production in West Africa is grade one. Thus it pays the farmer to sell the graded produce. Grading is essential for export markets.

Problems in Standardization. (1) Agricultural products differ from industrial goods in the sense that they are not produced as uniform in quality as the latter are. This peculiarity of farm products raises a number of problems.

(2) Quality grading in agriculture is within a narrow range of the standardised set but not in exact correspondence with it as is done in manufactured products. (3) Consumer preferences for various agricultural goods are of such a wide nature that it becomes very difficult to grade the produce for each preference. Such preferences range from eating, cooking or nutritive quality to eye appeal, size, uniformity or suitability for a particular use.

(4) The techniques used for grading may be sensory, physical, chemical or microbiological. The sensory tests have no scientific basis behind them, and need highly specialized men, e.g. tea tasters.

(5) It is very difficult to determine in agriculture the number of grades for a commodity, and to define precisely the limits of quality for fixing each standard.

(6) Agricultural products are perishable. Some of them can deteriorate in quality after having been graded and packed, e.g. ghee.

Storage and Warehousing. Storage and warehousing are services equally useful to the farmer and the consumer. As mentioned earlier, most farm products are produced at a point of time but are required for consumption by man and animals every day. It is through storage that their supply is made continuous throughout the year irrespective of the time of their actual production. It is a service required during the normal movement of the farm produce from the farmers to the consumers.

By evening out the supply, storage also helps in evening out the price fluctuations to a considerable extent; such a reduction in price differences and supply of products through proper storage is most significant in the case of perishable products, *e.g.* fruits, eggs, milk, etc. Storage also enables the producer to realize a better price for his produce by adjusting the timing of sales to better market prices. After allowing for storage, interest charges, etc., usually the trader is able to make a profit by storing the produce. But in some years of abnormal price behaviour, he loses quite heavily.

Proper storing prevents deterioration and spoilage of the stored products. One of the advantages of warehousing to the farmer is the availability of finance on the basis of the warehouse receipt for the produce stored. The farmers and traders in farm produce can get financial accommodation from individual as well as a banking concern on the basis of farm produce stored in private godowns and cooperative or state warehouses. Packaging. The economic functions of packaging are (1) facilitating handling; (2) reducing freight; (3) reducing storage and handling costs; (4) preventing deterioration and loss by protecting against dirt and damage; (5) making products more attractive; (6) enabling consumers to buy in convenient units; and (7) broadening of markets and increasing the demand for the product.

Processing. The conversion of farm produce into more consumable form is known as processing. A few examples of processing are grinding of wheat, preparation of butter, ghee or cheese from milk, slaughter and carcass-dressing. Processing for the purpose of preservation is also important. It is necessary for perishable farm products like fruits and vegetables. The advantages of processing are: (a) conservation of surplus produce during peak production periods into suitable forms for off season, for example, canning of fruits and bottling of juice; (b) reduction of bulk in relation to value aids in reducing the distribution cost; and (c) processing in adequate units improves quality, appearance, uniformity and economic use of byproducts otherwise lost without any return.

Transport. Efficient transportation is a cornerstone of the present-day marketing system. Normally, the produce is moved from the farm to the assembling centre, from there to the urban market and to the consuming centre. All forms of transport—rail, road, air and water –are used in moving the produce from the farm to its ultimate destination.

Efficiency in transport depends upon the speed with which the goods are delivered and the care taken during transit. The cheapening of costs is in the interest of both the farmer and the consumer. It increases demand on the one hand and makes the produce available to the consumer at lower prices. Depending upon the character of the commodity to be carried and its value, different freight tariffs have been evolved by the shipping and railway agencies.

Market Intelligence. Planning the sale at most profitable prices involves certain expenses in addition to the cost of various marketing services described above. A smooth marketing system depends upon accurate, adequate, and timely information. Specialized market intelligence service is a special feature of the modern economy. Additional costs are, therefore, incurred on gathering and disseminating market information, which plays an important role, particularly under conditions of keen competition to smoothen the ebbs and flows of prices. In the presence of an efficient market information service, goods will immediately flow in response to price incentives. It is necessary that the service should have as wide a coverage as possible both in area and number of commodities. Therefore, the small addition to the marketing cost due to the market information is in the interest of both the farmer and the consumer.

Selling. This is the end purpose of all marketing activity. This includes transfer of title and payment in lieu of it. An efficient sale service induces buyers to purchase and pay the price demanded. The importance of this service is growing and consequently the need of trained and efficient salesmen.

Each marketing service described before has to be paid for and the cost involved has to be added to the value of the farm product. The term distributive margin is generally used to denote the spread between the price which the farmer gets and one which the consumer pays for the product. The marketing costs vary from commodity to commodity for reasons given below:

The Value of the Product in Relation to its Weight and Bulk. The cost of freight, packaging, and storage as percentage of the total value of the product would be lower for commodities with higher values like butter as compared with milk.

Nature of Supplies. The cost of processing, packing, and use of equipment is less in the case of goods in production throughout the year.

Demand for the Commodity. There is a stable demand for foodgrains like wheat and rice. Once the price is competitive, no further salesmanship is needed to induce the housewife to purchase them.

Gradings. Commodities which can be graded and are uniform in quality are easier to sell and the marketing costs are less.

Number of Middle Men. If the chain of middle men involved is larger, the marketing cost goes up.

Distance from Production Point to Point of Consumption. Usually larger the distance and greater the number of markets and the intermediaries through which the produce moves, the higher is the cost of various marketing services, in particular, that of transport.

Special Care. Liquids and perishable products may need special containers and cold storage facilities. This add to the cost.

The marketing costs are usually higher in agricultural goods than those in industrial goods. The factors responsible for it are as follows:

(1) Small output of scattered producers adds to assembling expenses.

(2) Incidence of transport costs is high for bulky goods. Relatively farm products are bulkier in relation to their value.

(3) Grading is difficult due to large variations in type and quality.

(4) Regular production and supply are difficult to maintain.

(5) Storage and processing are needed to a larger extent to fill the gaps in supply due to the seasonal nature of production.

(6) There is risk in storage for perishable products.

(7) Sales by contract or sample are not easy in most cases.

(8) There are too many middle men particularly at the assembling and retailing stages resulting in unnecessary duplication of functions with consequent waste of resources and inflation of costs. The emphasis here is on the wastes inherent in the competitive system.

(9) In agricultural marketing, competition among the numerous and non-descript types of agencies is hardly perfect. Some sort of local monopoly often persists at the assembling and retailing stages. The farmer cannot give much time and energy to marketing. On the face of it, it may appear that there is competition among the buyers. But they as a class often may come to a secret understanding, which one may call as buyers' "rings". The wholesalers also claim a high commission for the services they perform.

(10) Traders would normally refuse to deal in goods unless they are assured of their minimum net profits. If there is a shortage of supply, the consumer is required to pay more. If the supply is in excess, the producer receives less. Profit in both the cases goes to middle men. Marketing costs remain rigid and hardly move in sympathy with fluctuations in prices. Marketing co-operatives can help reduce the marketing costs. It must, however, be clearly realized that most of the services constituting marketing have to be paid for. If the establishment cost of marketing co-operatives is higher than the amount saved in the form of middle men's profit, the total marketing cost may go up in the case of co-operatives.

Market Control Devices

Various mathods of group control over sales can be used by marketing board or government department to improve farmer's returns. One example is the sales limitation programme whereby the group delivers a smaller quantity in particular markets and raises the price thereby. In order to carry out such programmes direct group control over sales is essential together with administrative procedures whereby rights to market specific quantities are allocated periodically to each individual.

Price discrimination programmes as a form of sales limitation are feasible where different types of demand can be kept separate. It is worthwhile, however, only if the different types of demand vary in elasticity in response to changes in sales prices. A good example is the market for milk. Consumers of liquid milk for domestic use will pay considerably higher prices than buyers for manufacturing purposes, even though the quality is the same. It is necessary, however, that the liquid consumption and manufacturing markets be kept separate by means of a control system or else inevitably domestic consumers will buy the milk intended for processing into butter and cream. A marketing board can maintain such a system by refusing supplies to any distributor who sells milk for domestic consumption at less than an agreed price.

Another way in which group marketing control can raise average prices is through the manipulation of market flows. The objective of flow control programmes is to adjust supply over different times of the year, or between different outlets, in such a way as to maintain reasonably high levels of demands in all of the different markets at all times. Generally, an average price target is set for each outlet on the basis of experience in the preceding season. Sales are then expanded or contracted in order to avoid flooding the market at any one time or place and thus breaking the target price. These adjustments can be arranged through a marketing board with power to allocate markets to particular producers and limit the quantities delivered.
Marketing boards usually need compulsory powers to carry out such programmes. Co-operative or other voluntary groups can really carry flow control or limitation programmes very far. They rarely, if ever, command full participation by the industry. They have considerable difficulty in manipulating demand or sales. If the programme is effective then nonparticipant gains more than the co-operative participant. He can sell all his output in the highest price market, whereas the co-operative member may not do so. Thus the co-operative finds it difficult to maintain membership in the face of the disproportionate benefits acruing to outsiders.

Even with compulsory power there are limits to the returns from such marketing devices. A shift in demand to substitute products is likely if the price of the controlled commodity is raised substantially. For this reason campaigns to attract consumers are frequently linked with sales limitation programmes in an effort to counter the possibility of a long run decline in demand. Secondly, control schemes tend to perpetuate rather than solve problems of long-run surplus production. Reduction of output, by the elimination of the less efficient enterprises or producing areas, is frequently blocked by the compulsory distribution of total market returns on the basis of some notion of historical equity.

Marketable Surplus

The flow of supplies to the market is determined by the marketable surplus. The marketable surplus varies from commodity to commodity, region to region, and year to year. In the case of foodgrains, the marketable surplus constitutes only about a third of the total production. Cerealwise, in rice, the marketable surplus is about 31 per cent, in wheat 35 per cent, and in coarse grains about 25 per cent of the total production. In the case of commercial crops the marketable surplus is about 90 to 95 per cent of the total production. Since, in the case of food grains, only a small part of the total production enters the market, the variation in the surplus actually marketed affects very sharply the supply available for the non-farm and urban population and thereby the prices. At a point of rising prices there is a tendency on the part of

the producer to part with less of his produce as his limited needs can be satisfied with the exchange of a smaller amout of produce than before. A larger retention by the farmers during such period reduce the marketed surplus and thus accentuates the rise in prices. At a point of falling prices, the reverse happens. The marketed surplus tends to increase. The farmer has to sell more to meet his cash requirements. The psychology of the average trader is not any different. When prizes are rising he tries to hold his stock in the expectation of further increase in the prices and vice versa. The pace of flow of marketed surplus and its volume have a special importance in a developing economy. The increasing tempo of industrialization and urbanization necessitates the flow of agricultural produce to the consuming centres at an even pace and in greater volume. Both the producer and the traders have to play the game fairly. In the case of either showing a lapse in his responsibilities, the equilibrium of prices is disturbed, causing stress and strain on the country's economy. Government intervenes but a lack of effective organization, and sometimes corruption among services, worsens the situation rather than brings relief to people.

Therefore, government measures aiming at freezing of stock, compulsory buying of stock at controlled prices, regulation of ceiling on prices, restrictions on movement, etc., have always been controversial. Theoretically, they seem to be quite logical but in practice many loopholes have been discovered and it is not always easy to plug them all.

Besides price, farm surpluses actually marketed are determined by supplies as well. In bad agricultural years, the quantity marketed goes down even when the sale percentage of the total produce is higher. It all depends on what is the relative fall in production and the relative rise in the percentage sales. Since production is not under the complete control of the farmer, some buffer stock, particularly in the case of food grains, is desirable for evening out too violent fluctuations in the quantities available to even consumption to the non-farm population and in prices.

The marketable surplus for non-farm population also depends on the efficiency at which the labour force is operating in farming. Use of technological improvement in farm production should enable each worker to produce more than what he consumes. Besides technological progress, the farmers' own ability in management is also becoming an increasingly important consideration in the determination of the total volume of production in relation to the available resources.

CHAPTER THIRTEEN

PRICES IN AGRICULTURE

IF EVERY individual produced all his requirements, he need not have any goods from others. This is, however, not possible. In the most primitive society, one may borrow some food from a friend. It is true he pays no money for it. He may return the food to his friend later. Life in a modern society is altogether different. Such a variety of goods is needed today that even the thought of producing them all by one's own efforts would be sheer madness. Situations can be imagined and they are always there when it is advantageous to buy even the goods one can produce oneself. For instance, though a mechanic may be good at spinning and weaving, it would pay him to buy cloth from market because he could earn more money in the same time by making cycle components than from spinning and weaving. Thus the need for exchange arises.

Exchange is the act of giving away goods in return for those possessed or produced by some one else. If one has fish and the other rice and if both need fish and rice there is a case for profitable exchange. The one having fish may part with the surplus fish in order to get rice, and the one having rice may also do likewise. Exchange like "mercy" is thus twice blest, it blesseth him that gives and him that receives.

In the above example, the two persons may be supposed to have the following units of satisfaction for each unit of fish and rice. It has been presumed here that satisfaction can be measured and expressed in units.

	The man with fish		The man with rice	
	Fish	Rice	Rice	Fish
1st unit	10	10	10	10
2nd unit	8	8	8	8
3rd unit	6	6	6	6
	24	24	24	24

UNITS OF SATISFACTION

In the case of fish, one fish makes a unit while one kilogram of rice makes one unit.

Fish is perishable and the man having fish can use two without spoiling but he may spoil the third. He has, therefore, only 4 units of satisfaction (utility) from the third fish as compared with 10 from the first and 8 from the second fish. Rice can be kept longer without depreciation. Therefore, the man having rice has 6 units of satisfaction even from the third unit of rice. Now suppose one fish is exchanged for a kilogram of rice, each man will have the following units of satisfaction.

Man with fish			Man with rice	
1st fish	10	1st unit of rice	10	
2nd fish	8	2nd unit of rice	8	
One unit of				
rice	10	One fish	10	
28			28	

UNITS OF SATISFACTION

By exchanging one fish with one kilogram of rice both men have increased their total unit. of satisfaction. The man with fish added 6 units and the man with rice 4 units to his units of satisfaction.

In order to effect exchange, besides the desire to secure something from the other person, reason and foresight are also necessary. One should have sense to compare the potential satisfaction of a thing bought with that of a thing one is parting with. Since these essentials for exchange are generally there, we may now move on to the next important point to understand the terms on which exchanges are effected. How much must a man give of his own goods in order to obtain a certain quantity (and quality) of the other goods. In economics, it is the theory of value which provides us with an answer to such a question. A number of value theories have been put forward from time to time. But before discussing them, the term "value" ought to be clearly understood.

Exchange and Value

In everyday speech value is considered as a synonym of "worth"

or "utility." This is not so in economic terminology. Atmospheric air and water have inexpressible *utility*, but no *value*, so long as they are free. But if air has to be supplied in a cylinder to a diver, and water to the residents of a city through reservoirs, both attain value in the economic sense. Indeed, "utility" is always one of the elements of value. The reverse may not, however, be true. If a thing like air or sunshine is in abundant supply, no one would like to pay for it. Therefore, in economics, in addition to utility scarcity is another element of value. A thing, unless scarce has no value whatsoever.

Value is clearly distinguishable from utility. Subjective value resides in the mind. It cannot be measured. As against this, exchange value is "objective". It shows itself in actual transactions in the market, and can be subjective in definite quantities but not utility or subjective value. Secondly, exchange value is not an isolated but a market phenomenon. It reflects the subjective valuations of a certain commodity by a large number of people including both those in need of it and those who want to part with it.

A number of persons are engaged in the production of a commodity. There may be other commodities which can be used as substitutes, for example gur and sugar. Similarly, there are a number of people who have a demand, say, for gur. Some may be willing to use sugar in its place in certain circumstances but others may still insist on using gur. Now the value fixed ultimately, and this is known as price, is the result of bargaining between the producers and the consumers.

Labour Theory of Value

In the earlier stage of economic thought, it was contended that the power which an article confers on its possessor arises from the amount of labour spent on securing or making it. In primitive societies, labour was the only visible factor of production. Man lived by hunting or collecting wild fruit. In that society, labour spent was the only cost incurred in obtaining supplies. Thus, the labour theory of value explained the determination of value in terms of labour. This theory does not explain fully the variations in the values of different commodities. A piece of diamond on which very little labour has been spent still has a high value. Labour is not the only constituent of production.

Cost of Production Theory

Another theory states that the value is determined by the cost of production. But many a time we find that, if the supply of a commodity runs short, its value goes up even though its cost of production already incurred during this period had not changed. Normally the value decreases with an increase in supplies. One may then say that value is determined not so much by the cost of production as by the cost of reproduction.

But the cost of reproduction alone does not explain satisfactorily the changes in values. For, value rises or falls in tune with the variations in demand even though the cost of reproduction may not have changed.

Marginal Utility Theory of Value

Another theory put forth is that the value of a commodity is what it is worth to the buyer. If a person wishes to buy apples and censiders it worthwhile to purchase five of them, he will pay for one apple an amount equal to the utility derived from the apple which he just considers it worthwhile to purchase. Suppose the marginal utility of a consumer from apples is as follows:

Apples	Marginal Utility	
1	60	
2	50	
3	40	
4	25	
5	10	
6	0	

Suppose he thinks it worthwhile to consume four apples, he will not then pay for the fourth apple more than 25 cents, *i.e.* his utility from it, for if he does it, he incurs a loss. Since all the apples are bought at a uniform rate, he will pay 25 cents per unit, for all that he buys. The price per apple is thus fixed at 25 cents

i.e. the marginal utility to the consumer. This theory is known as the marginal utility theory of value. It does not explain fully the determination of value. The buyer may be willing to buy a thing at a certain price but the seller may not agree to sell it at that rate. Marginal utility itself is a variable factor. If there is a plentiful supply in the market and apples are offered cheaper, the purchaser may be prepared to buy more than if they are offered at a higher price.

Supply and Demand Theory

According to this theory, value is not determined by either utility or only by cost of production, but by an interaction of the two. In the long run, the supply is determined by the cost of production. This means that if the price offered is below the cost of production, the goods may not be produced any more. The marginal utility represents the demand for a commodity. If value is higher than its marginal utility to the purchaser, he will not buy it. Therefore, value is determined at a point where the quantity demanded is just equal to the supply. This is known as supply and demand theory and the value so determined under conditions of free competition is known as the market price.

In economics, demand means the quantity which would be bought at a given price at a particular time. Supply, similarly, means the quantity offered at a given price at a particular time. We must distinguish demand from desire. Desire refers to what a person would like to have while demand represents what a person is able to pay for and buy.

Exchange Value and Price

Price is the purchasing power expressed in terms of one article, say, wheat, gold or silver. In the present-day economy when money has been accepted as the common medium of exchange, price can conveniently be defined as "money value" of a good. Both these terms have thus come to be used interchangeably even by economists. One must, however, be careful in using them indiscriminately. Both value and price may continue to denote the same thing so long as the value of money itself is constant. As compared to the pre-war period, the price of wheat has gone up by about 15 times, but if the general price index with the pre-war period as base stands at 700, the rise in the value of wheat is only 8 times as against a 15 times rise in its price. Any change in the value of money has no relation with "exchange value." The latter may not change at all. If the money value, (*i.e.* the price of different goods) changes in different directions, the value of an article may also be affected in terms of another. For example, if the price of wheat is doubled but the price of cloth remains the same, the same quantity of wheat will buy double the quantity of cloth it did previously. But in the case where the price of both wheat and cloth is doubled, one will get the same quantity of cloth for a given unit of wheat as before.

Market and Normal Prices

Market price is the price of a good in exchange at a particular time. Normal price, on the other hand, is in the nature of an equilibrium (long term) price. According to Marshall, an equilibrium price is the price that if it were fixed at the beginoing of the period of time for which price is being considered, "and adhered to throughout, it would exactly equate demand and supply (*i.e.* the amount which buyers are willing to purchase at that price would be just equal to that for which sellers were willing to accept that price)." An equilibrium price in every application is one which balances supply and demand.

Market price (*i.e.* value in money-terms at a time) may thus remain above or below the normal price for a considerable period of time. Market price will no doubt tend to come as near the normal price as possible, but in actual practice, the two may never be the same. Normal price may be compared to the theoretical level of water in the ocean from which at any particular place the actual level would almost invariably differ because of the influence of wind, tides, and currents, but towards which it is always being drawn by the forces of gravity and flow. Market price may also be distinguished from the normal price in the sense that while market price measures the utility of the commodity to the last purchaser, (*i.e.* the person to whom it is just worthwhile to buy at that price), normal price expresses the sum of the efforts and abstinence of those producers who brought forth this commodity under the least favourable conditions. Since market price does not always reflect these efforts and abstinence, it differs from the normal price in this sense. In other words, the forces of demand have a greater influence on the market price, but forces of supply determine very largely the normal price, *i.e.* the price in the long run. The final determining force is demand in the sense that if there is no demand there may be no price.

Concept of Market

The term "market" is ordinarily used to mean a place where the transfer of a title over goods takes place, whether or not the actual goods are there. It may refer to demand also. For instance, sometimes it is said, "the market desires quality rather than a large quantity at a low price." Sometimes, the word "market" connotes price as well. For instance, it is commonly remarked that "the market is up," "the market is down." In economics, however, the meaning of market is entirely different. It refers to "area within which the buyers and sellers compete freely with each other to buy or sell a particular commodity." In this definition, the emphasis is more on freedom of competition and less on the geographical boundary to which this freedom applies.

In a highly competitive market, there are a large number of buyers and sellers, each buying and selling the same commodity. If such competition between the buyers and sellers is perfect, the market is also considered as perfect. The basic price of the commodity throughout the market may tend to be the same. Of course, allowance will have to be made for the differences in transport and other incidental charges in different markets. For example, one may refer to the Stock or Sugar Market of London or Cotton Market of Manchester. The price in London, say, of sugar, will be the export price of the country from which sugar is shipped to London plus the shipping and other incidental charges. But if such charges are excluded from the price of sugar in London the price in London and the exporting country should be the same under conditions of free competitions.

The Extent of the Market

The factors determining the geographic boundaries of a market are explained below:

Demand. For commodities like cotton, wheat and iron, worldwide demand exists. For certain commodities like betel nut and pan (a leaf chewed after meals), the demand is limited to certain countries, like India.

Supplies. The areas which produce the commodity and supply it have, of course, to be included in the geographical boundary of the markets.

The Extent of Free Competition. Within the areas described by demand and supply, the condition of free competition must be fulfilled. The following factors help or hinder free competition.

Cost of Transport. If it is too high in relation to the price of the commodity, the market may be limited accordingly. Bricks provide a good example. No one would think of transporting bricks for building houses over long distances within a country, much less outside it; for bricks the market is thus mainly local. But for special types of bricks, the market may be wider. In other words, the price of bricks in one place does not affect their price at another distant place. If the producers raise the price of bricks in that particular locality, even then the purchasers of bricks in that particular locality would not procure them from another locality because it would not pay them to invest on transport costs which may be out of proportion to their price. Gold, on the other hand, has a world market because it can be transported all over the world at a cost that forms an extremely small proportion of its price.

Durability. Some goods like milk, butter, flowers, fruits, eggs are perishable and cannot stand transportation over long distances. Modern developments, e.g. cold storage and refrigeration, have, however, made transport of such things possible over long distances, therefore the markets for these commodities have expanded much beyond what could be imagined feasible some time back. New Zealand and Australia export butter to Africa. Whole liquid milk is exported from Denmark to far off lands. The use of preservatives has also helped these developments considerably.

Cognizability. Goods are normally sold either by description or sample or inspection. The market for wheat is wide because it can be sold by description. An English merchant may order wheat from abroad after comparing the prices prevailing for a particular variety and the grades in different markets. This facility of selling by description helps both the purchaser and the seller. It is the most cognizable and uniform type of goods that can be sold by description. Those goods which have less cognizability and uniformity have a smaller market and can be sold by the sample. Cognizability and uniformity of a commodity determine the method by which it is to be sold; this, in turn, determines the extent of the market.

Government Restriction. A commodity (like wheat) which can stand test for having a wide market, may still have a smaller market because of government restrictions. These may vary from a complete ban on the movement of the commodity outside certain areas to putting tariff restrictions on it, thus raising the price of the commodity too high for it to be imported. The wheat zones in India during 1959-1961, and heavy tariffs on wheat by Germany, France, and Italy during the slump of 1931, are examples in point.

Monopoly. Monopolistic conditions have an indirect effect on the extent of the market through their influence on prices. The existence of a monopoly changes the price structure in different parts of the market. This is so, especially when price discrimination is being practised by the monopolist supplier.

In conclusion, it may be stated that since most agricultural commodities are highly perishable the prices of these goods are generally determined by the market forces. But in certain other cases where the produce can be stored without fear of rot or decay, the normal price is the rule, *e.g.* in the case of wheat. With the increasing availability of cold storage facilities, there is a tendency for the agricultural prices to conform to the normal pattern: these prices are determined by the forces of demand and supply as operating in the long run. The efficiency of transport also helps in letting the long run forces to operate in the agricultural sphere.

CHAPTER FOURTEEN

AGRICULTURAL FINANCE

AGRICULTURAL finance refers to the total capital investment, both fixed and working, in agricultural operations. It includes physical stock as well as cash. One can obtain finance for a business in two ways, *viz.*, savings, and borrowings.

Savings. A farmer may inherit land and other capital and working stock. This is an example of capital built up not through his personal savings but by his ancestors. It may have taken several generations to build up the property which he inherits. This is particularly so in the case of Indian farmers. In general, the margin between farming returns and living costs is so narrow that it takes quite some length of time of careful husbandry and industrious working assisted by benevolent Nature, for any farming property of worthwhile size to be acquired by an average farm family in India. In a number of cases agricultural fortunes, built up in generations, have been lost over a few successive years of bad harvests, an abrupt fall in agricultural prices ill adjusted agrarian relationships, or the exploitation of needy farmer by the landlord and the money-lender.

The farmer's own savings constitute one source of agricultural finance to him. Several factors determine his ability to save.

The area and quality of land and the size of farm business. In general, there are more chances for savings if the area of holding is larger and the land is of quality. Intensive farming is another way of enlarging the size of farm business and thereby savings.

Type of Farming. Certain enterprises, e.g. cash crops like sugarcane, cotton, and tobacco are more remunerative than cereals and millets. Livestock farming, poultry, and pig-keeping may ensure a larger return to the farmer on his investment and labour.

Management Ability. Farm management surveys have revealed time and again wide divergences in returns even on farms having similar resources. Such differences in returns are mainly due to varying managerial abilities of farmers in respect of planning and management. The significance of the factor of management has so far received much less consideration than it should have. It is commonly believed that farming does not need any proficiency in management skills, but during the last few decades there has been a noticeable change in this view.

Will to Save. In economic terms, it is expressed as discounting the current expenditure for future gains. In the case of farmer it may mean sacrificing the present comforts and using the savings to operate the farm. The will to save depends partly on the farmers' own knowledge of the scope of enlarging the returns through additional investments.

Borrowing

Another important method of augmenting farm capital is through borrowings. High levels of agricultural productivity call for high levels of input. Therefore, borrowings become necessary in agriculture as in any other industry. How much a farmer can borrow depends on his credit-worthiness which, in turn, depends upon financial worth and character. It is, in short, the confidence that one is able to inspire among the creditors. The basis of credit rating are three C's—character, capacity, and capital. The Raifessen model of agricultural credit co-operatives, formed on the principle of unlimited liability, reinforces the limited credit of an individual borrower with the collective credit of the members.

Kinds of Credit. Most classifications recognize three forms of credit— (i) short term; (ii) medium term; and (iii) long term.

The basic consideration in determining the form of credit, *i.e.* whether it belongs to short, medium, or long term is the period in which the loan under normal conditions is repayable. Repayment depends on the additional income resulting from the use of credit. The income from loan provides a measure of time during which the loan can be repaid out of increased earnings without causing hardships to the borrowers. For instance, crop loans, like working capital for seed, manure, insecticide, wages fall in the category of short term credit because such a loan can be repaid normally out of the sale proceeds of the crop at the end of the season which may vary from two to nine months in the case of most field crops.

A loan for expenditure on items like seed, fertilizers, manures,

irrigation, labour, in the case of tree crops which fruit in five to seven years is not, however, a short term credit. It may be classified as medium or long-term credit. A loan for similar purpose for crops which take over a year to mature, e.g. sugarcane, pineapple, banana, papava, etc. may be treated as medium-term credit. Except in the case of loans for production of specific crops, the period of repayment is determined not only with reference to income from the investment made with the assistance of the credit obtained but takes into account also the overall repaying capacity of the farmer based on the size of farm income and his own needs of living. A loan for farm building, storage or fencing may yield a return at such a low rate that no lending agency may agree to advance credit to the farmer for repayment over the long period determined on the basis of returns from investment. In such a case, the farmer, if he is keen to have the loan, has to repay it from his own business earnings within a fixed period. As illustrated by the example of production loans for various crops a loan for the same use, for instance, for buying a pair of draught bullocks may be a medium term loan in the case of a large farm, but may have to be treated as a long-term loan in the case of a small farm.

This should make it clear that similar loans may belong to one or the other form of credit as determined by the period of repayment or the repaying capacity of the debtor. The special attributes of agriculture, *i.e.* relatively low yield, greater hazards to production and the national need to sustain the farming community impel governments to provide grants and subsidies to the farmers. Such assistance need not be confused with farm credit, which implies their repayment.

Usually the period of repayment for short-term loans is a crop season or a year; for medium-term loans, two to seven years; while the long-term credit is to be repaid in periods exceeding five years.

Generally, production loans for annual crops and loans of small sums negotiated for repairs and maintenance of machines are repayable from the annual farm income and belong to short category loans for purchase of cattle, implements; more expensive repairs are medium-term ones; and loans for purchase of land, construction of buildings, permanent improvements, repairs involving heavy expenses are long-term finance. The longer the duration of loan, the greater is the need for a tangible or collateral security in addition to personal security to safeguard the interests of the creditor. In other words, medium and long-term loans are usually secured loans.

The other ways of classifying credit according to purpose, security, and source are as follows.

(a) According to purpose—(i) production credit; and (ii) consumption credit. (b) According to security—(i) secured, and (ii) unsecured. (c) According to credit agency—(i) private credit. (ii) co-operative credit, (iii) bank credit, and (iv) government credit.

Economists have often stressed the unproductive nature of agricultural loans, particularly those taken by the farmer for subsistence and social purposes.

The loans taken by the farmer to meet his normal needs of living are as good as any other form of production credit. The farmer usually works on his own farm or is engaged on superintendence and management. He is entitled to remuneration in the same way as the wage paid worker. If wages paid to a labourer are a form of production credit, loans taken by the farmer for living expenses have equally valid claim to their inclusion under production credit. What is usually not to be classed under production credit is the rather large sums borrowed or social ceremonies, litigation, etc. Such expenditure is not within the orbit of normal living expenditure. While such loans may be raised on the basis of farm business, the farm earnings may not be sufficient for their repayment. These loans are definitely unproductive.

In the case of small uneconomic units, when the loan for family expenses bears a ratio out of all proportion to the normal wage bill of the farm assuming that all farm work is done by hired labour, there is cause for concern. The distinction between production and consumption credit in these cases is meaningful. A proper understanding of the economic implications of consumption credit is necessary for a sound farm credit policy. Quite often institutionalized forms of credit co-operative or state have been too restrictive in respect of consumption credit leaving even the most loyal members with no option other than to seek credit from

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the private moneylender.

Peculiarities of Agricultural Credit

Price Risks. In addition to natural hazards the farmer faces much greater price risks than the producers in any other occupation. The time lag between the planning of production and actual yield is a few months in the case of field crops but is much longer in the case of cattle and plantations. It may vary from 2 to 8 years or even more. It is very difficult to forecast the trend of demand and market price so much in advance. The other difficulty is that once the production plan is put in action the farmer cannot go back. He has no control on production because even in agriculturally advanced countries, yields depend a great deal on natural factors.

An industrialist can adjust his production to demand at a very short notice. The lack of adjustability between agricultural production and demand causes wider fluctuations in agricultural prices. This often upsets the calculations of even the most experienced farmer regarding returns and his amortisation plan for debts contracted. For obvious reasons, the degree of fluctuation in agricultural prices is steeper than in industrial prices. The agriculturist is hit harder during economic depressions. An important point from the credit aspect is that both natural and price hazards may cause failure of repayments of loans over which the farmer has no control. The creditor has to take this contingency into consideration in advancing loans to the farmer.

Natural Hazards. A consequence of this, particularly in the case of small farmers, is that with a very narrow margin of savings, even in normal agricultural years, the failure of crops in one season alone may cripple them and lead to accumulation of debts. From the creditor's view point, it results in bad debts and uncertainty of regular repayments. Both these raise the cost of credit to the farmer. A crop insurance service is not organized in India and there are considerable practical difficulties in organizing it though plans are afloat for introducing it in selected areas.¹

Production in Small Units. As compared with an industrial unit, a farming unit is too small in capital investment and outturn.

¹ An Expert Committee has recently been formed to go into the problem of crop insurance.

This restricts the area of operation of the credit agency. Too much personal judgement is involved in knowing the financial position of the farmer. Because of a smaller volume of business, the cost of service rises. Lack of any tangible evidence on the financial position of farmers and the small units fail to create confidence about the soundness of their financial position, and are responsible for excluding agriculture from raising capital, e.g. through shares in the money market.

The small unit also adds to the risks and uncertainty of repayment and thereby raises the cost of agricultural finance. It also means inadequacy of capital. Due to small spatial units, the surface of land being an important factor in farming, the farmers are scattered over a large area and credit transactions with such units mean higher expenses in administering and recovery of loans.

Longer Period of Turnover. Because of the seasonal nature of production, the period of turnover is long. In the case of cattle breeding, raising of cattle for live weight, and tree crops, *e.g.* fruit, trees, rubber, oilpalm, etc., the turnover is as long as two to seven years. This means locking up the capital for that period which increases the total amount of interest charges. In the case of business which has a quick turnover, even with a smaller rate of profit the total profit in a year tends to be greater than in farming where the turnover is slow.

Poor or little Return on Some Agricultural Investments. Improvements such as land reclamation, clearing of land, levelling, drainage, fencing, etc., involve heavy expenditure but the yields from them are quite low. In such cases the farmer needs loans on specially favourable terms if he is to effect the improvements. Repayment has to be spread over a long period and the rate of interest has to be either nominal or the loan has to be free of interest charges.

Essentials of a Sound Credit Policy

The peculiarities of agricultural credit stated above bring out the following salient points in respect of a sound credit programme for agriculture.

Interest. The rate of interest on various types of agricultural

loans has to be lower than warranted purely by business or economic considerations. As explained earlier, looked at from the angle of cost of credit service the rate of interest on agricultural loans needs to be higher than that for commercial or industrial loans. But when viewed from the angle of demand, the rate of interest has to be lower than in commerce or industry.

Repayment. The period of repayment has to be adjusted to farm income, for short term loans to time of sale of farm produce and in the case of medium and long-term loans to overall savings from farming. Some adjustment has to be carried to the extent of satisfying the convenience of each class of farmer--small, medium, and long.

Close Contact with the Farmer. The only insurance a credit agency can have for its funds is to learn about the financial position of the borrowing farmer through direct contact. Efficient servicing of loans emphasizes a closer contact between the farmer and the credit agency.

Risks. An agricultural credit agency faces two types of risks. The crop failures may be widespread due to natural calamities, or a fall in prices may necessitate the postponement of recoveries over a large area, or the losses may be confined to individuals. In all the three cases some kind of common reserve fund among the primary units of credit institutions, to cover and distribute them over a large area, is an effective way of dealing with the problem of maintaining their financial position sound, and at the same time, charging a fair rate of interest on the farm loans, and helping the farmer with adjustment in repayments.

Education of the Farmer. The successful operation of a farm requires much more ability than any other business unit of the same size; the farmer often needs guidance in the proper combination of enterprises and planning of inputs to make the most economical use of his resources. If an effective extension service is lacking, part of the responsibility of educating the farmer in the proper use of capital devolves on the credit agency. In any case, the credit agency must possess information on farming costs and returns and risks to determine the credit-worthiness of its client and offer him convenient repayment terms.

From the above, it is clear that private credit, i.e. from professional

money lenders and even commercial banks*, could not fulfil the conditions necessary for an efficient credit agency sympathetic to farmers' needs, especially in India where the majority are small farmers. It has already been pointed out that agriculture cannot raise funds in share markets. At the same time, since farming provides food—the basic need of man—and raw material for industries, the welfare of the farmer is a matter of national concern, rather of the world as a whole because there is an increasing recognition of the fact that a large number of people subject to hunger and misery, wherever they be, constitute a potential danger to world peace. This brings us to the question of co-operative or state credit organization which will constitute an independent discussion.

*After the nationalization of 14 major commercial banks a year ago and socialisation of banks earlier, the position has changed. The commercial banks have already started operating in the agriculture field in a big way.

CHAPTER FIFTEEN

THE FARM CO-OPERATIVES

THE THEORY of co-operation briefly is that an isolated and a poor individual can, by association with others and by moral development and mutual support, obtain, in his own degree, the material advantages available to wealthy or powerful persons and thereby develop himself to the fullest extent of his natural abilities. The essence of co-operation is that each shall work for all and all for each towards the attainment of their common good. The whole of the business activity is conducted under a democratic management in an unselfish spirit.

A number of definitions have, however, been formulated from time to time. Herbert Calvert defined it as "a form of organization wherein persons voluntarily associate together as human beings on a basis of equality for the promotion of economic interests of themselves." Horace Plunkett would call it as "self-help made effective by organisation." In the words of M.T. Herric, "co-operation is the act of persons, voluntarily united, of utilizing reciprocally their own forces, resources, or both, under their mutual management to their common profit or loss."

Whatever the language used by these various authorities, cooperation can be said to be an organized (generally non-political) attempt on the part of an association of persons to engage in common activity for the satisfaction of their numerous wants. In one or another of its several forms, co-operation aims at removing the middle man, the employer, and the private creditor, and putting in their place the collective ownership and control of affiliated co-operators. Co-operation, said Charles Gide, has always been the result of suffering, of misery and of weakness. In their distress, men instinctively get together and seek in their union the strength which they individually lack.

Viewed in this light, co-operation has more scope in agriculture than in industry, particularly in underdeveloped countries like India where the unit of production is small and scattered while profits are low and insufficient in themselves to provide the capital needs of the business. The reason is that agriculturists are generally the weaker sections of the population and need mutual assistance for progress and plenty. Secondly, the underdeveloped nations do not have enough capital to invest as the weaker nations do, hence their road to progress lies through co-operation and co-operation alone.

Classifications

The official classification of co-operative societies adopted on the suggestion of the International Institute of Agriculture, Rome, is given, here: (1) credit; (2) purchase or purchase and sale; (3) production; (4) production and sale; (5) Insurance; and (6) Miscellaneous.

On the functional basis co-operatives may, however, be divided into two principal divisions with several sub-divisions as follows:

(1) Co-operation for production: (a) association of producers to produce co-operatively, e.g. co-operative farming; and (b) Association of producers to sell co-operatively, e.g. marketing unions.

(2) Co-operation for consumption; (A) For consumption of goods— (a) Domestic requirements; and (b) Trade requirements. (B) For consumption of services— (a) credit—personal, real or mortgage; and (b) insurance of crops and livestock.

There are accordingly different forms of co-operative organizations according to the specific functions required to be performed by them. Some of the important ones are listed below:

Consumers' Stores. These stores deal with stocking and sale of consumption goods.

Co-operative Farming. Co-operative farming is an example of producers' co-operation in the field of agriculture. In production, use of machine, irrigation pumps, irrigation improved farming techniques, *e.g.* spraying against pests and diseases, can be organized co-operatively.

Co-operative Credit. These societies attempt to obtain the advantages of collective capital and credit.

Co-operative Marketing. These are organized for the disposal of farm produce,

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Co-operative Processing. Many agricultural products have to be processed before consumption, e.g. wheat into flour, paddy into rice, oil seeds into oil, etc. Such processing can be done on the co-operative basis to eliminate the profits of middlemen.

Co-operative Insurance. Their purpose is to secure the benefits of safe and reasonable insurance at economic costs for the members of the association.

Co-operative Housing. They are organized for acquiring land and the construction of houses for living.

This functional classification of co-operation must not be interpreted too narrowly. It serves to emphasize the main purposes and functions for which each type of society is originally established. In actual practice, the same society may undertake more than one function particularly those which are not already taken care of by the other types of co-operatives. Co-operatives may be organized from the beginning to take up more than one business. They are known as multipurpose co-operatives. In agriculture, a multipurpose co-operative may supply production goods, consumers goods, farm credit, and arrange marketing of farm products. According to whether a society is undertaking only one or several activities, it is classified as a single purpose or multipurpose one.

Purposes of Co-operation

Co-operatives are institutional agencies for achieving social cohesion and economic betterment of people. In a country whose economic structure starts from village, co-operation is more than a mere economic activity; its goal is to evolve a system of co-operative community organization which touches upon all aspects of life. Within the village community there are sections of the population who need special assistance. Co-operation should, therefore, mean an obligation towards all families in the village and the development of land and other resources and of social services in the general interest.

The direct and immediate purpose of a co-operative enterprise is to reduce the cost of living or raise the income of the member by bringing the benefits and gains to him from production and distribution of commodities otherwise enjoyed by traders or middlemen. It dispenses, as far as possible, with the services and profits of business concerns in production and distribution of goods, provision of credit, insurance, etc. A co-operative agency tends to substitute the present system of private profit with a form of society in which social and economic needs are met by the united effort of all and all the members share the profits or benefits accruing from joint and common effort. This is the most significant ultimate aim of the co-operative movement when it gets well organized.

The ultimate purpose of the movement—the development of a co-operative commonwealth organized and functioning in the interest of the community of producers and consumers—is revolutionary in the sense that it seeks to reorganize our economic society both in its structural and functional aspects. The method of achieving this purpose is, however, evolutionary and peaceful. The movement is essentially economic and becomes political only when parliamentary action is considered essential to safeguard the interest of the various societies.

Private profits and a high price level are not the only conditions that stimulate the development of a co-operative enterprise. Under modern conditions and methods of production, distribution and credit, amount of capital required to run a business is usually so large that it is very difficult for an average man to engage in an independent enterprise on his own. Co-operation provides a medium through which the modest savings of small farmers, wage earners or salaried men may be pooled together to finance the production and distribution of goods and the construction of homes, and at the same time make possible the accumulation of additional capital to finance even large scale operations. As the economies, benefits and advantages of large scale production and distribution become effective, the co-operative enterprise becomes self-maintaining, granting the benefits of business to those who partronise and support it.

Characteristics of Co-operation

Economic and other social functions in the world can be performed in a number of ways. They may be broadly grouped as (a) the private way (capitalism); (b) public way (socialism or communism); and (c) the group way (co-operation) The third type—co-operation has a number of distinctive characteristics.

Open or Voluntary Membership. A number of persons, usually

not less than ten irrespective of their caste, creed, and status in life, can form a co-operative society. The membership is voluntary and open to all. In other words, one is neither forced to join nor stopped from leaving a co-operative. An effort is, however, made that the membership is confined to those who are well-known to each other. Reliability, honesty, and good character are important for membership in a co-operative society. They are the primary assets of a member and serve as a security ordinarily demanded by a moncylender or trader. The co-operative society, in the words of Maclagan Committee, "substitutes for material assets honesty and a sense of moral obligation."

There are certain other qualifications attached to membership. Some of them are of general nature and others depend upon the nature of the activity pursued by the society. A member has normally to be above the age of 18, of good character and of sound mind. A person whose membership may be harmful to the organization, *e.g.* one engaged in a business competing with the organization or having other interests hostile to those of the set objectives, may, however, be refused admission. As for specific societies, a cooperative for consolidation of holdings may, for example, lay down a stipulation that the membership would be open to only landowners, tenants, and other persons holding land in the area of operation by the society.

Similarly with regard to the voluntary nature of the co-operation, in special circumstances some sort of compulsion can be introduced in the larger interests of the society, examples being consolidation of holdings, crop protection, irrigation, crop and livestock insurance. The voluntary principle is otherwise accepted under the international code.

Democratic Functioning and Control. Co-operation is essentially democratic in respect of ownership, methods of control and administration of the enterprise. Therefore, it differs from profit sharing schemes which have their primary aim to make profits. The control is distributed among the members. This is achieved by the principle of "one member, one vote," irrespective of the number of shares held by each. There is actually a restriction even on the number of shares that a member can purchase. Thus all members have an equal voice in the management, and no one can gather into his hands an undue share of powers and privileges and dominate over others. None can promote his own interests to the detriment of other members or the society. Marketing and purchase co-operatives in the USA which allow additional votes according to the subscribed capital of the members do not strictly qualify to be called as co-operatives in the real sense of the term.

Services at Cost and Distribution of Surplus Income to Members in Proportion to Transactions. One of the fundamental principles of co-operation is to provide services at cost. This includes the limited return to capital as discussed above. Certain proportions of the net profits are allocated to reserve fund, welfare fund, etc. The balance left may be distributed to members and others on the basis of the volume of their business with the co-operative. There is a general provision nearly in all co-operatives to set apart roughly 25 per cent of the profits for the reserve fund; the remaining 75 per cent only being available for apportionment in other ways. A part of profits may also be set apart in the form of "common good fund." This gives the co-operative the look of a family-like institution. All the members and their family are eligible for help during distress.

Service as the Primary Object. Since service and not profit is the primary object of a co-operative, in a number of cases all members are made eligible for a rebate at a specific rate depending upon the value of the purchases or sales made by them. This procedure places a premium on the extent of co-operation loyalty on the part of a member rather than the number of shares, he has purchased. The rebate is also thrown as "patronage dividend."

Essentials for the Success of Co-operation

(1) There must be a genuine need for a co-operative. It should be formed on the initiative of those who want to benefit from it rather than a gov rnment official, *e.g.* a co-operative supervisor forcing it on the people to achieve this target fixed for him by his superiors. But this should not be misinterpreted to mean that a government should not encourage the formation of co-operatives. In developing economies, there is a genuine need for co-operatives but they can come into assistance only through the educative propaganda of the official staff.

(2) There must be favourable chances for getting an adequate volume of business so that the association may be operative on business lines.

(3) The moral movement should be run on moral principles. Importance should be given to the development of character of its members. The idea of self-help through mutual help should be kept foremost.

(4) There should be dynamic leadership from within its membership to enable adjustment of the association to the new conditions for time, need, and competition. Such leadership has often to be discouraged or encouraged by the co-operative official.

(5) Political and religious neutrality should be respected. Political or religious views of members should not come in the way of the business activities of the co-operative.

(6) Cash trading, especially in the consumer co-operatives, should be adhered to as far as possible, but complete refusal to provide credit facilities may make it difficult for the co-operative association to compete with other agencies in the field and it may fail simply for this reason.

(7) Co-operation education should be promoted. General as well as co-operative education to members is necessary to the continued life and progress of an association.

(8) In conformity with the existing law of the State, there should always be a strong financial base and a suitable structure for the co-operative.

(9) Suitable books, records, and accounts should be maintained. Auditing should be timely. Where the volume of business can justify, a competent person can be employed to look after this work and where it is not economic to do so some among the literate members may be trained for the job.

(10) There should be competent management. A very large number of co-operatives fail only because of their inefficient management. Members should, therefore, be trained to manage the society on efficient lines. The staff of the co-operative department may also provide guidance from time to time. If the business is too large to be managed internally and sufficient to pay for it, qualified management personnel may be hired. The membership of a co-operative society should not be so large as to make it difficult to function in cohesion. The Second Five-Year Plan emphasized this by pointing out that "the limit to the range of activity to which the principle of co-operation can be applied is set by the fact that a co-operative group should be reasonably small for its members to know and trust one another."

In appropriate spheres, the co-operative form of organization has advantages which neither the system of private enterprise nor that of state ownership can match. It offers a means of achieving valuable results by drawing equally upon motives which are social and motives which are individual. Where it succeeds, co-operation brings large gains to the community. But the trouble is that it does not succeed always. The human factors involved in it are complex which make much more difficult for the co-operative form of organization to succeed. The main factor which contributes to failure of co-operation is lack of individual incentive, because the individual shares the collective gain which may not often be in proportion to each individual's effort—some not putting the same effort also share the gains equally. An individual entrepreneur does not suffer from such a disadvantage.

CHAPTER SIXTEEN

SOME ASPECTS OF CONSUMPTION

ECONOMICS is a study of man's actions in the ordinary business of life. Hence it studies the man in his completeness. Economics would, therefore, seek to explain the actions of men in consuming such wealth as they possess or obtain as the result of the efforts of themselves and of others; in producing further wealth for themselves or for their fellows by utilizing and developing the resources of nature; in exchanging one with the other, a part of the wealth which they possess for other wealth which they desire; and finally, it considers and investigates how and in what proportions the total wealth of a community is distributed amongst its many classes and individuals.

All economic activity is done to produce, exchange, distribute, and consume to get satisfaction. It is said that consumption is the end of all economic activity and all commodities are produced in order that they may be consumed. But it may be half the story because it is also the start of the economic cycle. Consumption discusses all wants so that they are tried to be satisfied and in this try whole of the economic cycle moves and again comes to the start where another want is waiting to be satisfied. Hence thus discusses all wants—their origin, nature, and characteristics; the laws governing them; and how we can get maximum satisfaction of wants out of the expenditure. It may be repeated that it is the "necessity" and "desire" to consume wealth which gives rise to all economic activities.

The act of consumption is the using of utility and hence consumption may also be defined as the destruction of utilities for the direct satisfaction of human wants. Marshall actually regarded consumption as negative production. But all consumption is negative production, because some of the consumption may be consumed by other producing industries. Consumption may, therefore, be either productive or final; when it is productive it is directed towards producing another commodity or service during the process, *e.g.* using sugarcane to manufacture sugar. It may be final, where consumption is the end, e.g. sugar for sweatening tea. Agricultural production is primarily meant for consumption, though some of it may be productive in the sense already explained.

Consumption is related to all other departments of economics, such as production, exchange, and distribution. It is the start of the cycle. The need for the satisfaction of human wants leads to economic activity and this activity leads to the production of wealth which may be consumed for the satisfaction of the want directly. But today's economics has become specialized. Consumption leads to production and production via exchange and distribution comes back to consumption.

Wants and their Characteristics

No explanation of consumption can be complete without discussing the characteristics of wants. Wants are to be distinguished from desires or needs. Wants have an economic connotation while needs and desires do not have that implication. Want is a desire which is backed by the ability to pay for and willingness to satisfy it. Mere desire for a thing will not constitute want or demand, unless a person has got money to implement that desire. Demand has always a reference to the price of a commodity. The demand for a thing at a given price is the amount of it, which will be bought per unit of time at the price. The demand, therefore, would vary with a variation in the price level.

The Law of Demand, therefore, says that the amount of a commodity demanded rises with a fall in price and falls with a rise in price, other things remaining the same. Thus the demand varies inversely with the price. This law can be explained by an illustration of a demand schedule that explains the relationship between the amounts demanded at different prices.

DEMAND SCHEDULE OF AN INDIVIDUAL (COFFEE)

Price per kilogram (in Rs.)	Amount demanded in kilograms
12	3
10	4
8	6

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A question would arise—why does demand decrease with a rise in price and vice versa. Demand rises with a fall in price on account of two reasons—one is the substitution effect and the other income effect. A fall in price induces the consumers to substitute the relatively dearer commodity by a relatively cheaper one. A person generally purchases up to a point where marginal utility of the commodity is equal to the marginal utility of price paid. Secondly, a fall in price increases the real income of the consumers, who are induced to purchase more.

Utility

This question brings us to the study of utility and the law on which it functions. If we look to our belongings, we shall see that all the things that we possess satisfy some or the other want. And if they did not have this attraction, we shall never have them. Hence the capacity of a commodity to satisfy human want or wants is known as its utility. Utility can sometimes be confused with usefulness. Utility has nothing to do with usefulness; it only studies the capacity of a commodity to satisfy some human want, good or bad. The satisfaction of the want may produce good result or cause an injury-this is not a material point at all. If it satisfied a human want, it has utility. Now the degree of utility depends upon urgency to satisfy a particular want, but it is not inherent in the commodity. It varies at times and in different places. It does not depend upon the internal characteristics of an article but on the external circumstances-the relation between the consumer and the article in question.

Law of Diminishing Utility

Utility, as explained above, depends upon the urgency to satisfy a particular want and if that want is satisfied, its utility lessens till it vanishes or it may even become negative. Supposing that a man is thirsty so much so that he should get water or he would die, and he is given a glass of water to drink. For that glass of water, he could have given anything in exchange because it saved his life. With one glass his thirst is quenched a bit and he would like to have another glass of water. But he would not die if the second glass is not given to him. Hence he would not be in a hurry to pay the same price which he would have paid for the first. It brings us to a law which discusses the utility and is called the Law of Diminishing Utility. It says that the marginal utility, derived from a thing, will go on diminishing with an increase in the stock of that thing and increasing with a decrease in the stock. Thus the starving man would give all he possessed for one loaf of bread. Having eaten that one loaf, his desire for a second loaf would be less, and by the time the third arrived he might be considering the possibility of asking for a glass of beer to wash it down. Thus as each successive loaf comes into his hand the price which he is prepared to pay for the next diminishes.

Now it was not the loaf of bread which has utility inherent in it; it was the man who wanted that loaf and who was prepared to pay any price for that. It follows, therefore, that the utility of all commodities is not the same. Some commodities have greater utility than others and the same commodities may have different value at different time and different place. Question would arise how does a man measure the utility and how do we say that the utility is the same for a particular commodity.

Economists do not possess any accurate means or apparatus for measuring utility. If one wants to measure temperature, it can be measured with a thermometer. But no such measure is available for measuring utility. The economists have, therefore, devised an indirect method of measuring utility. The amount of money that a person is prepared to pay for a commodity rather than go without it is a measure of its utility. Utility differs with respect to time, person, and place. It, therefore, depends on a person's subjective estimate of the amount of satisfaction to be derived from something. Wine, for example, is of great utility to a drunkard, while another person may not like to touch it, even when given free.

As a person goes on purchasing more and more units of the same commodity, he arrives at a point, when he thinks whether it would be worthwhile to purchase more or not. That point is the marginal point and the utility derived from that purchase is called the marginal utility. Marginal utility is, therefore, the utility of the marginal unit which one considers just worth his while to purchase. Here the utility given up in the form of money is just equal to the utility gained in the form of the commodity. The utilities of all the units constitute the total utility. It should be borne in mind that while the total utility goes on increasing with the additional purchases made, the marginal utility goes on falling owing to the operation of the Law of Diminishing Utility. The total utility becomes maximum when the marginal utility is zero.

This tendency operates universely and is visible in the case of all the objects satisfying human wants. The law, therefore, explains that each unit of a commodity gives, other things remaining the same, less utility to the consumer than the foregoing unit.

To illustrate, let us suppose that a man with a family of four needs seven kilograms of rice for consumption for the persons month. The utility of the first kilo would be immense, because otherwise the family members would die of starvation. Let us say, the utility of the first kilo is 100. The second kilo would be necessary, but would not be so essential. Its utility would, therefore, diminish to, say, 80. The third kilo would be less urgently required and so on. The utility would go on falling, till he reaches the 7th unit, which satisfies his full demand. At this point, the utility would be zero and obviously he would not purchase the 8th kilo of rice, because it would not be required by him and he would not like to spend money for nothing. It may even bring him disutility for two reasons: one, because he will have to spend money on it without getting any satisfaction in return and two because the consumption of the additional kilogram might spoil the digestion of the consumers.

This can be illustrated by a diagram. Kilograms of rice are measured along the X-axis and utility along Y-axis. The first unit of consumption gives 100 units of utility. Similarly plotting other points, we get the curve AA, which shows a steep fall, representing a fall in utility.

As is clear, the Law of Diminishing Utility operates on some "ifs" and the greatest "if" is that other things should remain the same. These words are significant and imply the following important qualifications.

(1) The units of the commodity must be similar in quality and quantity. Suppose the first glass of water to a thirsty man is pure



water but the next is a juice, then the utility from the second glass may be even more than the first. Similar considerations apply to the quantity of each unit.

(2) Period of consumption must also be the same, meaning thereby that the process of consumption must be continuous and if a break occurs, the law shall not operate. If the first glass of water is given in the morning and the second in the afternoon, the utility of the second would be greater; but if the second glass is given in succession, utility would be less.

(3) Consumer should also maintain the same mental outlook. This is very essential. If after taking the first apple, the consumer is told that the apples are very good for health, the second apple would yield more utility. Similarly, even when the zero utility has been obtained by taking, let us say, the fifth *chapati*, if the consumer is given a doze of *bhang*, he would relish the sixth and the seventh *chapati* even more and obtain more utility than even the first one.

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(4) Lastly, the price of the commodity and its substitute should also remain the same. If an article becomes cheap, one may want it with increasing intensity and its utility may, therefore increase. The utility may also increase if the price of its substitute has gone up.

Though this law has almost universal application, there are certain exceptions to the rule. For example, if the units of consumption are very small, the successive units may yield more utility. Curios and rare objects may also yield more utility as the man would feel more satisfaction in collecting more autographs. Similarly, a drunkard would have more utility in the second peg of whisky than the first. But these are more apparent than real, and the law deals with the two aspects of human desire —satiability and variety; but it does not take account of the other aspects, such as impulse, love of power, desire for a role in life and so on. The utility analysis thus suffers from an "irrational passion for dispassionate rationality." Cairneross says: "The law concerns only the form and the content of our wants."

Marginal Utility and the Law of Diminishing Utility

When we talk of the diminishing utility, we always have in mind the marginal diminishing utility. It is the utility at the margin which gets reduced, not the total. Total always increases unless the marginal utility is negative. Hence for clarity, the law is usually described as the Law of Diminishing Marginal Utility.

The sum of all utilities at the margin is the total utility. In the aforementioned example, the total and the marginal utility of the seven kilos of rice would be as follows:

Kilogram of Rice	Marginal Utility of Rice	Total Utility
1	100	100
2	80	180
3	60	240
4	40	280
5	20	300
6	10	310
7	0	310
8	20	290
It would be seen that the total utility goes on increasing till the zero utility is achieved at the margin. When this point has been reached, the total utility remains the same as before and after the marginal utility is negative, the total gets reduced. It is, therefore, clear that when marginal utility is zero, total utility is the maximum.

Law of Equi-marginal Utility

In economics, the main problem which we have to study is "scarcity." There is a scarcity of resources at our disposal and with these scarce resources, we try to satisfy our wants. The income at our disposal satisfies some, but not all of the wants, and we try to spend it in such a way as to obtain the greatest amount of of Equi-marginal Utility tells us the way to satisfaction. Law maximize our satisfaction from the limited resources. It says that a person, to get a maximum satisfaction from his expenditure. will have to distribute his income in the different uses in such a way that the marginal utility of money in each of these uses may Suppose a person is purchasing banana and orange. be equal. As he purchases more units of bananas, the marginal utility of banana begins to fall, but the marginal utility of oranges begins to rise. Only at the margin the last penny spent on banana has the same utility as the last penny spent on orange, and the person, thereby, maximizes his satisfaction. This is why, the law is also known as the Law of Substitution or the Law of Maximum Satisfaction. It is also known as the Law of Equi-marginal Returns, because the producer tries to allocate his limited resources in such a manner that he may get the maximum returns.

The Law of Equi-marginal utility is of very great importance. The great advantage in following this law is that the consumer is able to derive maximum satisfaction from given resources. He can apply this law in spending money; making use of a commodity; apportioning money income over present and future uses; and allocating a commodity over present and future uses.

This law is also important in other departments of economics, like production where producer is advised to substitute a cheaper factor of production for a dearer one. In exchange also the purchaser purchases the article which gives him greater satisfaction for the same price and thus tries to follow this law. The theory of equal distribution of wealth is fundamentally based on this law.

At all points on the boundary, a marginal extension has a utility less than the price of the commodity, while a marginal contraction results in a sacrifice in utility greater than the price of the commodity. Thus, we find that the concept of margin is very important in all branches of economic theory. It is only at the margin that all shiftings are done. It is at the margin that business failures and bankruptcies occur and financial ruins are registered, and it is at the margin again that new firms and enterprises take their rise.

Consumer's Surplus

The concept of consumer's surplus is derived from the Law of Diminishing Marginal Utility. We pay price according to the utility of the marginal unit, where the price paid is just equal to the utility obtained. For the earlier units we were willing to ray a higher price. The difference between the price, which we were willing to pay and the price which we actually pay is the consumer's surplus which we enjoy. As is the fact, when we purchase a commodity for consumption, we gain some utility by consuming it, at the same time, we lose some utility in the shape of the price we pay for it. In the beginning the utility gained is usually more than the utility lost; and we go on purchasing the commodity so long as the utility derived continues to exceed the utility lost. Now in the case of each unit purchased, except the last one, we have derived more utility than what we have lost. The surplus utility or satisfaction, which is thus acquired by the consumer, is known as the consumer's surplus.

This brings us to the question of individual price and the market price. Individual price is the price which an individual is willing to pay for the different units of a commodity, but market price is the price which he has actually to pay. Market price is governed by the utility of the marginal unit --the unit which the consumer is just induced to purchase. For earlier units he was prepared to pay more but he pays the same price for all the units. So there is a difference between the individual demand price and the market price and this difference measures the extent of the consumer's surplus which a person enjoys.

Consumer's surplus can be measured by the difference between the individual demand price and the market price. The simple formula is-consumer's surplus is equal to total utility minus marginal utility multiplied by the number of units purchased. But the measurement of this surplus is not so simple as it appears to be. It is fraught with difficulties. Firstly, different consumers have different tastes, habits, temperaments, and sensibilities: the circumstances of consumers also vary and it is difficult to find out a complete list of the demand prices. Secondly, in the case of necessaries and conventional necessaries it is difficult to measure the consumer's surplus as the consumers will be willing to spend the whole of their income rather than go without them and so the consumer's surplus may be regarded as infinite. Thirdly, in the case of articles having prestige value, as diamonds, consumer's surplus will decrease with a fall in price, instead of increasing. Difficulty is also experienced in measuring consumer's surplus of the commodities having substitutes. Lastly, in measuring the consumer's surplus the marginal utility of money is regarded as constant which is not really the case, as the marginal utility of money goes on increasing with a diminution in its stock

The best way to depict the extent of consumer's surplus, derived as a result of the fall in price of a commodity, is through the Indifference Curve. The utility analysis can only be useful if we consider only one commodity. In real life, however, every consumer will have a scale of preferences, and in between the related commodities, there may be several combinations, which will give equal satisfaction to him and he will be indifferent to any of these combinations, he buys. The utility curve fails to present all these combinations and this difficulty is removed by the Indifference Curves. Let us take two articles—potatoes and grapes. The scale of performance of a consumer showing different combinations of potatoes and grapes, to which he would be indifferent, may be represented by the following table.

Grapes	Potatoes	
4 kilos	$2\frac{1}{4}$ kilos	
or 5 kilos	I z kilos	
or 7 kilos	1 kilo	

All these combinations represent the same amount of satisfaction for the consumer and he would be indifferent to any of those combinations of grapes and potatoes.

Indifference Curves are drawn on the assumption that the income of the consumer or the prices of goods do not change. If the income changes but the price remains constant, this satisfaction will be increased or decreased with a rise or fall in income. If the income rises, he will move to a higher Indifference Curve and, therefore, enjoy a higher level of satisfaction. The reverse will happen if his income falls. This is known as the "income effect."

Secondly, the prices may change but the consumer's money income may also change in such a way that he is not affected at all. The consumer will, then, change his preference substituting the relatively cheaper goods for the relatively dearer ones. This is known as the "substitution effect."

Thirdly, the income of the consumer may remain constant but prices may rise or fall. If prices rise with income remaining constant, the consumer will suffer; if prices fall the consumer will be better off. Again, as a result of price changes, the consumer will go on substituting the relatively cheaper goods for the relatively dearer ones. This is known as the price effect which is a combination of both the income and the substitution effect.

The practical importance of the Indifference Curves has been eloquently summed up by Benham as below:

Indifference Curves can be used to portray a person's scale of performances between any two alternatives, provided there are only two. Thus, they can be used to portray his scale of preference as between income and leisure, showing how he would divide his twenty-four hours each day between leisure and remunerative work at any given rate per hour. Again they can be used to show the scale of preferences between present and future consumption, between liquid assets and income-yielding assets and so on.

The Indifference curves can also be used, as Stigler says, to show whether the standard of living of an individual has risen or fallen.

Standard of Living

When we talk about a rise or fall in the standard of living, we must know what standard of living means. Every one of us uses certain articles of necessity, comfort, and luxury, and through long use we become so much accustomed to them that we feel acute pain if we miss them. The articles of necessity, to which a man becomes habituated, determines his standard of living. It is thus composed of habits of man, and habits die hard; hence the standard of living of a person is more or less fixed. It is, however, comparatively easy to raise the standard of living than to lower it. A higher standard of living signifies the satisfaction of a larger number of wants. It is, therefore, the endeavour of every individual and nation to achieve a high standard of living. But what are the factors on which the standard of living of a person depends? These may be (1) the amount of income spent, and (2) the wisdom with which it is spent.

Other things remaining the same, a rich man is in a position to satisfy a larger number of wants than a poor man. Again of the two persons, who have equal income, the one who spends his money more wisely will have a higher standard of living than the other. An expensive standard of living, in other words, is not necessarily a high standard of living.

True to the theme of times, everybody—individuals as well as nations—believe that a high standard of living is an ideal which should be achieved and striven for. Modern nations, therefore, try to harness the national resources and use scientific methods of production to make their people richer and happier. In fact, a higher or lower standard of living has become the index of an advanced or a backward nation respectively.

All people, therefore, try to adjust their expenditure according to their income to obtain the maximum utility and a higher standard of living. An idea about the standard of living of a nation can be formed from the family budgets of the people. It is a detailed statement of the estimates of income and expenditure of a family relating to a particular period.

Family Budgets

Family budget studies are of great importance in economics. They help a householder to follow the principal of equi-marginal utility. It also enables him to distribute his income proportionately between expenditure and savings. The budget would give him a complete picture of all his income and where he has to spend it.

A good deal of research work is based on the basic data released by surveying the family budgets. It gives an idea about the economic position of the country and also enables the researcher to compare the economic position of various classes of people in the society. Such data are now being fruitfully utilized for projecting the demand for various food items and serves as an important tool in agricultural planning.

The study of family budgets is important to social reformers as well. They know the extent of poverty in the country and the gaps in the position of haves and have-nots. Statesmen might also make them the object of their activities and bring about a reform in a decisive way through taxation and other legislative measures.

Engel's Law of Consumption

Family budget surveys were first put to a practical use by Engel, as far back as 165⁷, in Germany. He carried out such surveys in the different parts of the world and divided the family expenditure into three groups—labour class, middle class, and the rich. The main items of expenditure were classified into food, clothing, housing, heat and light and education, health and other services. He concluded that food was the most important item of expenditure in all the budgets and percentage to the total expenditure varied from 62 in the case of labour class to 50 for the rich. His results may be summarized in the following table.

Item of Expenditure	Labour Class	Middle Class	Rich
Food	62	55	50
Clothing	16	18	18
Housing	12	12	12
Heat and Light	5	5	5
Education, Health etc.	5	10	15
Total	100	100	100

DISTRIBUTION OF TOTAL EXPENDITURE OF VARIOUS TYPES OF FAMILIES ACCORDING TO ENGEL

He found that as the income increased the share of expenditure on food decreased. The law as stated by Carl Clark Zimmerman says:* (a) "the poorer is a family the greater is the proportion of the total outgo which must be used for food; and (b) the proportion of the outgo used for food, other things being equal, is the best measure of the material standard of living of a population."

Engel's Law as further elucidated by Zimmerman has three phases appropriate to different ranges of income.**

(i) Once the starvation level is passed, additional increments of income are associated, for a period at least, with increase of the proportion expended for food. This occurs when the food expense is so low that the population feels underfed and intensely desires more appetising food.

(ii) Additional increases in income are associated with an increasing amount spent for food, but a rate which gives a decreasing proportion of the total income. These relations occur among populations securing food sufficient for existence and comfort.

(iii) Finally, as income increases further, there is some evidence that the amount spent for food may actually decrease. The upper sedentary and rich classes are in this category.

It would be clear that Engel's law is nothing but the general economic law of substitution. Every individual tries to distri-

*Earnest Engel's, "Law of Expenditure for Food," Q.J.E. No. XLVII, November 1932, pp. 78-101. Quoted by E.M. Ojala, Agriculture and Economic Progress, pp. 87.

**Consumption and Standards of Living, pp. 117-18.

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bute his income in such a way as to derive maximum utility from the total money at his command. With every increase or decrease in income he substitutes one thing for other so that there is no diminution in the total utility.

CHAPTER SEVENTEEN

AGRICULTURAL TRADING

TRADE, domestic or foreign, consists of the movement of commodities and services from one area to another. International trade means trade between nations. The productive resources and skills vary between regions and nations. These differences give rise to trade between them.

A country may be rich in agricultural resources, in minerals like iron or coal, or in both agricultural resources and minerals like India. Countries such as the U.S.A., Japan, and those in Western Europe have advanced in technical skills, whereas many less developed countries are not. Countries differ in capital resources as well. The U.S.A. has comparatively a greater advantage over others in this respect

Under planned economic development, a country can gradually overcome the differences in technical know-how and capital resources but the differences in terms of land in the wider economic sense (*i.e.* soil, climate, and mineral wealth) are basic and can never be made up completely. Economic developments all over the world influence international trade. For ages India was renowned for her textiles. Gradually, with the invention of machines, it lost that trade. It became a big importer of Lancashire cloth. Now it manufactures textiles not only for her own needs but also exports to a number of countries. With growing technical know-how, it is not only self-sufficient in manufactured goods like sewing machines, cycles, and electric fans, but has surplus production for export as well.

Distinguishing Features of International Trade

Capital and labour can move easily within the national limits, but their movement beyond the national boundaries is hindered by economic, political, and social factors. As a result of free competition in the production sphere, differences in wages, interest and profits within the same country tend to disappear. The lack of such free competition at the international level is responsible for differences in the remuneration to factors of production and the real worth of money. This accounts for the differing average standards of life among nations. As mentioned earlier, the differences in natural resources, technical skill, and capital formation among nations are the other determining factors for the level of living of their peoples.

Secondly, the system, of government and the economic policy followed by a country may give it an advantage over others in the production of goods by cutting down the real cost of production. Countries not having such advantages find themselves unequal in competition with such countries in international trade. Thirdly, international trade involves transactions in foreign exchange. Central Banks play an important role within the national boundaries to control foreign exchange. International trade is thus trade between persons under the regulation of different Central Banks which may be following different policies in the regulation of foreign exchange.

Theories of International Trade

The classical economists believed that goods would move from the country where they were cheaper to another where they were costlier. Thus the trade between nations would benefit all. Adam Smith said: "It is the maxim of every prudent master of a family never to attempt to make at home if it will cost him more to make than to purchase."

Excellent as these doctrines of free trade between nations seem, they do not suit an underdeveloped country. What is taken as free competition is not really free competition. Competition between advanced and underdeveloped countries is like that between two runners one of whom has a start of one mile in a two-mile race.

Ricardo refined the earlier theory by introducing the concept of comparative costs. Trade between countries, he maintained, is governed neither by labour cost, nor necessarily by

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absolute advantage. What determines this, on the other hand, is the comparative cheapness of production. This fact was explained by the case of two countries—say England and Portugal. Assume that the labour cost of production of wine and cloth in the two countries was as follows:

	Wine (X units)	Cloth (Y units)	
Portugal	80	90	
England	120	100	

LABOUR COST OF PRODUCTION

In this example, although Portugal has absolute advantage over England both in wine and cloth, it will pay England to specialize in cloth and import wine from Portugal. At the same time, it is advantageous for Portugal to specialize in wine because Portugal could acquire with 80 units of labour cloth that would cost her 90 units to produce at home.

This does not, however, explain how the actual ratios at which goods exchange in international markets are determined. The difference in labour costs referred mainly to difference in division of labour, and, therefore, the difference in its effeciency. Mill elaborated the point further and explained that "it is not a difference in the absolute cost of production which determines the interchange but a difference in the comparative cost." Instead of taking as "given" the output of each commodity in two countries with a difference in labour costs, he assumed a given amount of labour but differing output in each commodity. For the same quantity of labour he assumed the output of two goods in England and Germany as follows:

	Cloth	Linen	
England	10	15	
Germany	10	20	

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In England, 10 yards of cloth exchange for 15 yards of linen, while in Germany they exchange for 20. It would pay England to get more than 15 yards of linen in exchange for 10 yards of cloth and also Germany to get 10 yards of cloth for less than 20 yards of linen. The actual ratio will, however, be settled at 10 yards of cloth for 16 to 19 yards of linen, based on the principle of reciprocal demand. By assuming that 10 yards of cloth exchange for 17 yards of linen, he proved that the actual ratio will depend upon the elasticity of each country's demand for the other country's produce. Whatever the ratio, a condition of equilibrium would be attained only when the total value of cloth exported by England is equal to the total value of linen exported by Germany. In the case of any difference between the two, movement of gold will take place, depreciating the prices in the country which loses gold, hence giving stimulus to exports. This tendency Mill referred to as the equation of international demand. Exchange takes place in such a way that the total exports pay exactly for total imports.

General Equilibrium Theory

The classical theory was assailed by Ohlin who treated the theory of international trade as an integral part of the general equilibrium theory of value. His general equilibrium theory of International trade stands on the established fact that international trade is approximately governed by differences in money prices of commodities, which are the resultant of an equilibrium attained by the simultaneous interaction of demand for those commodities and of the quantities and prices of the factors required to produce them. Their movements are determined like the units of the solar system by a set of mutually governing forces. Demand is one of those factors, for without demand a commodity will have no price. The cost of the commodity is another force. The cost is nothing but the sum total of the prices of factors of production required to produce the commodity. The prices of factors of production depend upon their demand which is derived from the demand of the commodity. The prices of factors also depend upon their scarcity or abundance. The thoery of international trade is, thus,

treated as an integral part of the general theory of prices.

According to the general equilibrium theory of international trade, the different factor-endowments of countries are at the root of the different commodity prices and profitable international trade. Some countries are endowed with wide stretches of fertile land, others possess sandy soil. Some possess large but illiterate unskilled population, others a population of the moderate size but greatly advanced in skill and technical efficiency. Some have vast capital equipment, others poor supplies of capital. These variations in production factor-equipment are the main causes of these inequalities in cost of production and commodity prices which lead to international trading.

International trade would not arise if all the countries were equally well-equipped with productive factors and the same combination of the factors of production was used in the production of different commodities. But, in the real world there is neither equal scarcity nor complete mobility of the factors of production. Differences in factor-endowments therefore cannot be neutralized by moving factors from one country to another. In this connection, Ohlin is careful to point out that this lack of free mobility between countries is not a peculiarity that characterizes international trade. For even within a country, factors may not move with perfect freedom. For purpose of analysis, it is obviously wrong to mark out nations as units of localities in which there is no free mobility, for even between regions and localities there may not be free mobility. International trade has, therefore, to be treated as only a special case of inter-regional trade. While lack of free mobility of factors and the presence of transport costs and trade restrictions affect the conditions governing international trade, the productive factor equipment of different nations is the real foundation of International trade. Those commodities are exported which require for production a large quantity of cheap factors available within the country, while other commodities which require for their production a large quantity of dear or relatively scarce factors in the country are imported.

Each country or region then produces or exports that commodity or those commodities for which factor-endowment is the best under conditions of equilibrium, and imports other commodities. Any change in the condition of international demand or of home demand will alter relative scarcities of different factors of production, giving rise to changes in the proportion in which they are combined and consequently, to changes in the commodities produced and traded in. To use the words of Ohlin, "it all comes to this; the nature of inter-regional trade is determined not only by the supply of productive factors, nor by the relative scarcities which that supply in relation to demand has created in each isolated region, but also by the play of demand in each region for goods from the other and the reciprocal demand. In fact, a fundamental aspect of trade is that it places the demand of the region in touch with the supply of productive factors in the other."

It will be seen that international trade which is only a form of inter-regional trade, thus becomes the means by which each nation makes full use of its factor-endowment, and by which nations together obtain full benefit from the differences of factor-endowments. If factors of production could move freely from one nation to another, each nation would get them and combine them in the best proportion for producing different goods, and geographical inequality of factors endowments would not exist at all. Since it is not so, some factors cannot move. The commodities produced by them would accordingly move and their movement takes place as if it were the movement of the factors themselves. International trade in this manner mitigates the disadvantages of the unsuitable geographical distribution of productive facilities.

Current Trends

In recent times, trade has been encouraged or discouraged without any regard to cost differences. For example, exports have been encouraged through subsidies after the 1929 Depression and World War II.

Under the auspices of International Organizations like Food and Agriculture Organization of the United Nations, international trade agreements are concluded for various commodities. This complicates further the theory of international trade when put in actual practice. Another development interfering with the free play of the theory is the regional agreements among countries, for example, the European Common Market in which six Western European countries have come to the common understanding of almost free trade among themselves. Countries suffering from food shortage have to import foodgrains irrespective of comparative costs.

Unequal competitiveness in international trade because of unequal economic growth in various countries explains why the policy of free trade is injurious to underdeveloped countries but does in no way prove the theory to be wrong. Similarly, governmental restrictions do not affect the theory except that in applying the theory to realities one has to take note of such restrictions and limitations. A fair competition is possible only between equals and not between weak and strong. Political considerations too dominate international trade today. The international mobility of capital is restricted not by transport costs (as in the case of internal trade) but by obstacle of an entirely different character, such as legal redress, political uncertainty, ignorance of the prospects of investment in a foreign country, imperfections of the banking system, instability of foreign currencies, and distrust of the foreigner. International trade is not governed by an objective criterian only but also by the rules of law in existence in each country. Economic standpoint, however, has not been altogether abandoned and foreign trade normally depends upon specialization

Advantages and Disadvantages of Foreign Trade

International trade confers numerous benefits on the exchanging countries. These may be summed up as follows:

(1) It enables a country to import the commodities that it needs at a cheaper price.

(2) Since every country specializes in the production of those goods in respect of which it has the maximum relative advantage, the sum total of national dividends of the countries concerned increases thereby enhancing the economic welfare of the people of those countries.

(3) International trade enables countries to import raw materials

and foodgrains on cheaper terms thus putting a check on any undue rise in the value of labour and commodities. The price of agricultural commodities which are produced under conditions of diminishing return rises unduly as the demand for such commodities increases, with the result that the national dividend of the country producing such commodities shrinks. With the introduction of international trade a country may import such commodities from other countries and thus put a stop to any further enhancement in their prices. According to some economists, this can be done only at the expense of any other country which may be forced to produce those commodities at increasing cost. But the country which exports the agricultural commodities may reap the benefits accruing from the specialization in the production of these commodities as long as these are produced with increasing returns.

(4) Specialization in the production of those goods, in respect of which a country has the maximum relative superiority, is not possible in the absence of foreign trade.

(5) International trade enables a country to obtain from other countries those things which it cannot produce itself. England, for example, imports shellac, tea, jute and cotton, which it does not produce.

(6) It prevents the formation of trusts and kartels. There may be some non-competing groups of producers in a country who may be enjoying a sort of monopoly in the production of certain class of goods. Introduction of international trade tends to break monopolistic trends.

(7) It tends to bring about a great harmony of interests among different countries of the world and thus minimises the dangers of wars. Nations become economically interdependent and find it to their disadvantage to quarrel among themselves.

(8) During famines and other scarcities imports from foreign countries save millions of lives.

(9) International trade prevents rapid fluctuations in prices. Stability of price is the first essential condition of healthy growth of industry and trade.

(10) International trade increases natural productive power to its maximum and opens the way for development of national industries.

(11) When the productive capacity of all countries increases, the world as a whole gains and standards of living may rise all round.

(12) International trade brings together people from different nations; this leads to cultural advantages.

Some of the disadvantages of international trade are as follows:

(1) As a result of international trade a country may be compelled to produce articles which are subject to the operation of the law of diminishing return. The cost of production of such commodities rises, the margin of profit diminishes, the national dividend falls, the real wages are reduced and the economic welfare of the community as a whole suffers.

(2) Foreign trade alters the internal price levels of the exchanging countries. As soon as a self-contained country enters into international trade, its internal price level tends to move sympathetically with the world prices. Now, the question is, whether such an alteration can be beneficial or injurious to the country. Every nation is composed of different classes of people whose interests are not identical. Often-times they are mutually conflicting. Businessmen, debtors, and profesional men gain by high prices. On the other hand, labourers, creditors, and fixed salaried persons stand to gain by low prices. An alteration in the price level dislocates the whole economic system of the country. Neither high nor low prices are desirable. Fluctuating prices are incompatible with the best interests of industry and trade. But an alteration in the price level of a country caused by its participation in international trade, is only a transitory phenomenon as, in the long run, international trade tends to stabilize prices.

(3) For some time international trade can cause economic hardship to a large number of people by throwing them out of employment. Thus, when an economically self-sufficient country wants to have trade relations with other countries, it specializes in the production of only a few types of goods in respect of which it enjoys the maximum relative superiority, and it gets from other countries articles which it needs. The closure of such industries throws out of employment a large number of people and a large amount of capital. But this is again a temporary phase, for labour and capital thus thrown out of employment are diverted to the production of those goods in which the country specializes. Of course, so long as the conditions are not readjusted, there may be some temporary hardship.

(4) Professor Nicholson maintains that foreign trade makes people familiar with cheaper goods (for example, machine made goods) and destroys their artistic taste. Thus, with the introduction of cheap machine-made substitutes, the demand for Kashmir shawls, Dacca muslins, etc., has declined.

(5) In a case of specialization, a country may have to depend on other countries for its prime necessities, such as foodstuffs arms and ammunition. In such cases, if the country, which supplies these things, declares an economic blockade in times of hostilities, the importing countries may be starved to surrender.

(6) Importing injurious articles, such as cocane, opium, and liquors of different kinds, from foreign countries may adversely affect the physical and moral well-being of the people of the importing country.

(7) Over-specialization resulting from international trade leads to overproduction which brings other attendant evils in its train.

(8) Over-specialization in the production of certain commodities of an exhausting nature for purposes of export depletes the natural resources of the country and is fraught with serious consequences.

Restrictions on Foreign Trade

The restriction may take the form of tariffs, import quotas, bilateral trade agreements, export subsidies, commodity agreements, currency devaluation, control of exchange, and domestic price policies. The object may be either to control trade or to serve other national interests.

Tariffs and Trade

Tariffs are duties levied on imports or exports. The purposes and effects of tariffs on the economy of a nation are: (1) protection of home industry; (2) regulation of consumption; (3) earning

revenue; (4) Regulation of redistribution; (5) regulation of termsof-trade; (6) regulation of employment; and (7) control on balanceof-payments.

Protective Effect. The tariff can be levied on imports to protect the home industry against cheap imports. For example, an import tariff on wheat would have the effect of increasing or maintaining the home production of wheat in the face of competition with foreign wheat. A tariff on exports would instead of providing protection have a "destructive" effect.

Consumption Effect. Tariff on imports will restrict consumption while the one on exports will have a favourable effect on it. This is because while the price of the imported item will be raised by the amount of tariff imposed, the export item by having its price raised in the foreign market might not be able to sell abroad to the same extent. This would result in larger supplies of the commodity at home at a lower price.

Revenue Effect. Tariff duties are a great source of revenue and constitute substantial proportions of income in many countries. As Kindleberger states: "This is less a matter of equity in taxation than of administrative convenience. Goods are easier to tax than the intellectual abstraction which is 'income'. And the flow of goods is constructed at ports of entry so that foreign trade is more readily taxed than the domestic.

An import tariff will eliminate the adverse effect on consumption only if the prices abroad fall by full amount of the tariff. The single revenue purpose can be served only when the commodity is not produced at home. This is also possible in cases where an equal excise is imposed on domestic production to eliminate the protective and redistributive effect.

Redistribution Effect. Under conditions of free trade, the price of an abundant factor rises and that of the scarce ones falls. Interference in foreign trade by tariffs will redistribute income among factors engaged in different proportions in producing different goods.

Terms-of-Trade Effect. It is true that the consumer in the importing country has to pay a higher price. But this is offset, so far as imports are concerned, by the revenue effect. Improvement in the terms of trade may or may not make the country

as a whole better off. This will be related to the volume of trade. The optimum level of tariff for the purpose will be the one where the volume of trade tends just to decline.

Employment Effect. Any impetus given to the home industry opens avenues of employment. This is in a way the direct result of the growth of industries under protection.

Balance-of-Trade Effect. Import tariff naturally helps to improve the balance-of-trade by restricting imports. But this argument for the imposition of tariff again is 'beggar-thy-neighbour' and holds only in the absence of retaliation.

Case for Tariff

Diversification of Industry. Protective tariff helps to diversify the industry and the productive effort of the people is spread over a large number of industries. The sugar and cycle industries in India would not have grown to their present stature in the absence of such tariff. Agriculture is also being protected in some European countries.

Home Market Argument. Even those whose products are not benefited by tariff can benefit indirectly in the sense that those employed in the protected industries, being better off, will have a larger demand for the home products of those industries which are not protected. Home market is always a sure market as against the foreign market which can be disturbed for a number of causes.

Infant Industries Argument. Years of effort are normally required to establish a new industry. If protection is not given to the industry in the early stag's it would be rather difficult for the industry to stand up against foreign competition. Just as a child requires support while learning to walk, an infant industry needs protection in the early stages. One has, however, to guard against the tendency on the part of the industry concerned to clamour for the continuation of protection even when it is not needed. In other words, such protection should have a time limit within which the industry should be able to stand in competition on its own.

Defence Needs. Defence of the country is important. The key industries which are likely to suffer during periods of war have to be protected during normal periods. This is necessary

for not only the defence industries but also for other basic and key industries. The industrial structure of the country depends upon such industries. If such industries are not developed, there is the danger of the whole industrial fabric falling to the ground during periods of war or other emergencies.

Self-sufficiency. Self-sufficiency is a craze with the people in most parts of the world. We are not discussing here how far it is desirable for any nation to aim for self-sufficiency in every respect. But once a nation decides to do so, protection would come quite handy in the achievement of such an objective.

Protection against Dumping. Sometimes a country resorts to the policy of dumping her surplus goods in foreign markets. 'This would drive away the home product from the market. In such cases protection is necessary in sheer self-defence. The dumping country may have the intention of destroying the industry of the other country and then raising prices later on.

Wages and Standard of Living. Wages of labour and standard of living differ from country to country. Countries with a higher standard of living and higher wages have to protect their industries in the interest of maintaining their standards. Since labour constitutes an appreciable share of the total cost, it would be difficult for such countries to meet foreign competition in the absence of protection.

Bounty-fed Goods. Internal production has to be protected against import of goods supported by state bounties in other countries, since such a bounty gives an unfair advantage to the bounty-fed sugar from Europe being dumped in India. Protection has enabled the industry not only to meet her home requirements but also to export.

Countries with Depreciated Currencies. Depreciation of a currency makes the goods of the country concerned cheaper and in a way has the same effect as bounty. Tariffs in the importing country have naturally to be raised in all such cases if the industry is to be saved from the unfair foreign competition.

Case for Free Trade

Comparative Advantage. Under conditions of free trade, each nation will try to concentrate on the production of those goods

in which it has the greatest relative advantage or the least relative disadvantage. This would in a way lead to specialization and all the advantages accompanying it. The general consumer in the importing country will be a gainer in the sense that he will be able to get cheaper goods from other countries. His standard of living will also rise. His own goods which he can produce cheaply will also find a ready market outside. One has to make a distinction between a real and apparent disadvantage. By real disadvantage is meant that the country lacks potentials to produce the goods in question advantageously. An extreme example may be of the UK producing tropical products like tea, coffee, and rubber. The cost of their production would be prohibitive. Apparent disadvantage refers to the situation in which the country has the potential to produce advantageously but for some reasons the production has not developed. Logically, free trade should not rule out the levy of protective tariff in such a case.

Destruction of Valuable Resources. If a country possesses some limited resource of a particular material it will have the tendency to utilize it to the maximum extent possible under conditions of protective tariff. Under free trade such a situation will not arise because in normal times it may be cheaper to import it from outside where it is in abundance. The home resources will then come quite handy during an emergency like that of war when imports are not possible.

Inferior Home Market. It has been argued in favour of protection that employment gets a stimulus in the protected industry. Since the protected industry suffers from less advantage comparatively, the people working in it earn less and consequently have less purchasing power. Ultimately, this may also prove to be illusory in the sense that exporting industries may also suffer. Exports are primarily linked with imports. If imports are restricted, exports will be automatically restricted and employment will be affected.

Infant for Ever. Experience in India and abroad has shown that the argument of infant industry tends to be abused. Once protection is given to an industry it tries to remain an infant for all times to come under one or the other pretence. First, it is difficult to decide which is really an infant industry. Secondly, once granted protection, these industries will try to bring all sorts of pressures so as to continue to remain under protection.

Rising Standards. Higher wages in a country are related to higher production. It is wrong to say that, in the absence of protection, cheaper goods from other countries will tend to lower the wages in the home country. Protection wili, in fact, turn labour to inefficient industries and will consequently bring down wages as well as standards of living. Protection will also try to bring down standards of living because the worker has to buy from a dearer market. All these impediments are removed under free trade. Both parties stand to gain as for the same money value they can secure more of goods.

Protection Creates Monopolies. A protected industry, since it gets a favoured treatment and competition from outside is checked, tends to adopt a monopolistic attitude. This is, however, not possible under free trade.

International Problems. Besides the economic handicaps discussed above, a number of political difficulties also arise when countries resort to protective tariff. Once a retaliatory type of policy starts, bitterness is created and all this ultimately ends not only in the disruption of trade but also strained political relations.

Import Restrictions

Besides tariffs, restriction on imports can be effected by stopping imports through a system of linked purchases, import quotas, or exchange quotas.

Linked Purchases. This means that an importer has to buy a specific proportion of the home product before he is allowed to import the commodity from the foreign country. The home market product may be either some of the competing article or even the same commodity though considered as of inferior variety. Millers in some of the European countries are required to include in their grist a certain percentage of house produced wheat.

Import Quotas. Under this method, the total quantity of the commodity to be imported is fixed in advance. Licences are issued to the approved importers within the prescribed limits and alloca-

tions are also made between the various countries from which imports are to be made. A slight variation of this may be what is called a "tariff quota" which means that a specific quantity is allowed free of duty or at concessional tariff. But all quantities beyond this are subjected to a heavy tariff.

Exchange Quotas. In all international transactions, foreign exchange is involved. By placing restrictions on foreign exchange a Government can also control international trade. Just like quantitative controls on imports/exports an exchange quota will fix the value of imports/exports 10 be made by an individual from any country.

Bilateral Trade Agreements. The nature and content of such agreements depends on the agreements reached between the countries concerned. It may mean lowering or raising tariff or quota limits for a specified period during which no further changes are to be made. The treaties may include the "most favoured nation" clause, which can be modified if a special change is agreed upon by the countries concerned.

Export Aids and Restrictions

Exports depend on imports. When restrictions are placed on imports, exports also tend to decline. Countries then adopt measures of aiding exports without changing their tariffs.

Commercial Treaties. This is more or less the same as bilateral trade agreements as discussed above. The object invariably is to secure a favourable market for exports by moderating trade restrictions on the imports from other countries. It may or may not involve an active policy of tariff bargaining.

Dumping. This is done by selling a commodity in the world market at a price lower than the domestic one. This may be done either by an export bounty or through a monopolistic control of marketing which permits producers to receive a higher price on that part of the output which is sold in the domestic market. This is normally through direct government intervention. We have already remarked that this is not a very effective measure because the other country where goods are dumped can do away with the effect of such dumping by tariff restrictions. Standardization of Commodities. A positive measure to encourage exports is the standardization of the commodity concerned. Some of the countries may even resort to careful control and inspection of all the goods intended for export. This serves as a great attraction to the importer. A government guarantee of quality and standard is still more helpful. Government may resort to state trading also.

Production Restrictions. The production of the commodity itself is regulated.

Commodity Agreement

Agricultural prices are subject to large fluctuations. One of the measures adopted in the international field to stabilize the prices of tropical products is by international commodity agreements. Rather than stabilizing, the object has sometimes been to raise the price level also. This measure has been adopted as a means of helping the poor countries export the commodity. But it runs the risk of causing the break-down of such agreements, particularly by stimulating production in countries which are either not a party to the agreement or do not, in practice, observe it. Moreover, in the case of products facing competition from synthetics, raising the price above a certain level is likely to cause a switch in demand away from the natural products.

Because of the difficulties of various countries agreeing to work under a certain discipline, the history of international commodity agreements has been chequered. In the 1920's there was a rubber agreement, which broke down because of the expansion of production in non-member countries. At subsequent times before and after the war, schemes have been introduced for coffee, sugar, wheat, and oil. The sugar agreement, which virtually broke down as a result of developments in Cuba, was successfully negotiated again during 1968-69. This agreement is expected to help stabilize international prices of sugar in the free market which had not been under any regulation since 1961.

Other agreements which were renewed during 1968-69 were those of coffee and oil. The new agreement on coffee was an extension of the existing international coffee agreement, with some modification. One of the main problems tackled under it is that of bringing supply and demand of coffee into balance. There has been an International Wheat Agreement in operation for some time past. A Wheat Trade Convention of the International Grains Arrangement (IGA), however, came into force on 1 July 1968 for three years. The Convention prescribes not just one basic price range for one "reference" wheat, but a whole schedule of minimum and maximum prices covering all the main wheat traders. It was under considerable strain in the very first year of its operation in the maintenance of wheat prices at the prescribed minimum levels. The recent victory of Japan in its battle with the exporting countries for cheaper wheat signifies the virtual collapse of the IGA.

Besides these agreements there are also informal arrangements on jute, kenaf and allied fibres, and on hard fibres, and the International Sultana Producer's Agreement. No arrangement has yet been arrived at on cocoa and dairy products.

In principle, there are two main ways in which an international commodity agreement can function. It can be based on (a) a buffer stock, (b) export quotas for individual countries. Under a buffer stock scheme, an international organization is established by member countries and empowered to buy on the world market when prices fall below some agreed "floor" price, and to sell when they rise above an agreed "ceiling" price. The buying and selling prices can be periodically revised, or set by reference to a "moving average" of market prices. The theoretical attractions of this scheme are considerable, as it does not involve any interference with marketing channels or with individual countries' policies, and provides stability without adversely affecting the long run trend of prices. But in fact the only international buffer stock agreement that has ever functioned is that for tin. No agreement has been reached for agricultural products. The reason is basically that rivalries, animosities, and clashes of interest between nationsnot only between importers on the one hand and exporters on the other, but also within these groups-combined with the technical problems of deciding the right buying and selling prices have been so great that the nations have not been able to reach any agreement on joint financing and operation of a buffer stock.

The method that has, therefore, been adopted has been that of export quotas for individual countries. Each exporting country is given a quota of exports, which is increased or suspended when prices are high, but imposed when they are low. This method also raises a host of administrative problems. First, there is the problem of ensuring that all exporting countries keep to their export quotas. Produce can be smuggled out, or even shipped out in the normal way, if national authorities are not vigilant; if "cheating" of this kind becomes too common, the agreement will break down. There is the further problem of implementing export quotas. A State export monopoly can keep exports down by building up stocks, but the countries concerned often lack the financial and technical resources to hold large stocks. lf production increases too much, it may be necessary to seek to limit it, either by production controls, which are very difficult to administer, or by lowering the producer price. As far as the individual producer is concerned, a price reduction removes the very basis of the scheme; the country, however, may still benefit, as the State Trading Board will earn surpluses which can be used for economic development.

On account of these difficulties, suggestions have been made in recent years for a quite different approach to the problem. The purpose of supporting world prices when they are low is essentially to make the importing countries pay more than they would otherwise have done, and to maintain the foreign exchange earnings of the exporting countries. It has been suggested that the problem be tackled through an agreement by which the importing countries make cash payments to the exporting countries when the latter's receipts from the export of primary products fall by some specified amount. Proposals for "compensatory financing" of this type were just put forward recently. These have understandably been received more favourably by the exporting than the importing countries. The idea also bristles with problems of defining the amount and the distribution of compensation. The international Monetary Fund has adopted the principle by providing credits for countries suffering from low prices for their exports of primary products, which they pay back when prices improve. An extension of a flexible scheme of this sort may well be more practicable than a rigid and comprehensive international agreement.

Another scheme which has been suggested by some French experts is to levy a tax on the consumption of primary products in the developed countries, and refund the proceeds to the governments of developing countries for use in general economic development. Whether such an arrangement would benefit the exporting countries would depend on the price elasticity of demand for their product. In the case of most non-food agricultural products, demand above a certain price level is elastic; as a result of competition from synthetics, the imposition of such a tax would lower total receipts, and thus be harmful for the exporting countries. On the other hand, if demand is fairly inelastic—as in the case of tea, coffee, and cocoa—such an arrangement would raise receipts and benefit the supplying countries.

The practical difficulties of determining tax rates and allocations, and preventing evasion, are considerable, although perhaps not insuperable when the demand is price inelastic. Theoretically, similar results could follow if the exporting countries themselves restricted exports, or imposed an export tax. These policies have, in fact, been adapted by some exporting countries (e. g. the Indian export tax on tea) but a prolonged application of them requires international agreement, since if pushed too far by any one exporting country, these policies will affect adversely that country's competitive position. Basically, it has been the lack of international cooperation that has so often led to the breakdown of international commodity agreements. Thus the extention of more orthodox forms of aid seems on the whole a more workable proposition.

CHAPTER EIGHTEEN

TAXATION AND THE FARMER

TAXATION is one of the principal sources of State revenues to meet the expenditure. A sound policy of taxation helps economic development by encouraging people to save for investment. A wrong taxation system may temporarily yield a large revenue but retard the economic growth to such an extent that the people and the government loose ultimately and the national income goes down. In agriculture, land revenue is a big source. In many countries an agricultural income tax is also levied. Apart from direct taxation, indirect taxation affects a great deal the prosperity and income of people including agriculturists.

Cannons of Taxation

Adam Smith propounded the famous four cannons (principles) of taxation.

(1) Cannon of Equity. The amount of tax should bear a relation to the income each man enjoys under the protection of the State.

(2) Cannon of Economy. The cost of collection should be a small proportion of the total tax income. The most economic tax is one in which the cost of collection is the least.

(3) Cannon of Certainty. People should know for certain the amount of tax to be paid and the place and the time of its payment.

(4) Cannon of Convenience. The collection of tax should be so arranged that least inconvenience is caused to the assessee.

Out of the four cannons of taxation recommended by Adam Smith, the last three are more in the nature of details of procedure for the collection of taxes. The first, namely, the principle of equity which is of basic nature may be discussed. The acceptance of this principle immediately raises in one's mind questions such as, what is equitable, and how to make taxes equitable, etc. Among the various views expressed since then the following three need mention.

(1) Cost of Service. The basis of tax should be the cost of service rendered to the assessee.

(2) Value of Service. The basis of taxation should be the utility one derives from the service rendered.

(3) Ability to Pay. The tax should be so imposed that each person pays according to the income he carns.

It is easy to apply the "cost of service" principle in public undertakings such as postal service, electric and water supply, railway and air service, where the cost of service to each individual using such service can be determined. But the cost of service and the value of service principles cannot be applied in the case of general expenditure such as defence and administration. The difficulty in allocating the cost to each individual or determining the utility to each individual as well as the fact that certain services such as medical treatment have to be made available to all whether they can pay for it or not have led to a general agreement on the adoption of "ability to pay principle" in taxation.

Under this principle there are three types of taxes levied: (i) proportional, (ii) progressive, and (iii) regressive. Under the first, all tax payees contribute the same proportion of their income, under the second, the persons with larger income contribute a larger proportion but, under the third, a smaller proportion of the larger income goes in taxes. The tax could be levied on a single commodity, *e. g.* land. In such a case it is known as *single tax system*. When it is levied on more than one source of income it is called *multiple tax system*. The needs for revenue have grown so enormously with the expanding State activities under the ideologies of a welfare State that no single source of income can provide all the revenue needed. Therefore, multiple tax system is adopted in all countries of the world.

Direct and Indirect Taxes

The person on whom the tax falls initially is said to have borne its impact, while the person who ultimately bears its burden is termed to have borne its incidence. In direct taxes the impact and the incidence fall on the same person, while in indirect taxes it is different, for they are shifted from the payer to another person.

A direct tax is paid by the person on whom it is legally imposed and who also actually pays it--it cannot be shifted. He cannot transfer it to another person. An indirect tax can be shifted partly or wholly to another person. A tax paid by another person/party on behalf of some one else will not be termed as indirect. Under British income tax system, for example, landlord's property taxa tax derived from the ownership of land and buildings-is collected from the occupier who under statutory rights deducts it from the rent he pays to the landlord. The tax would be termed as direct and not indirect. Most consumer taxes (e.g. those on commodities), where their incidence falls on the ultimate consumer, are called indirect taxes. Except land revenue and agricultural income tax, most of the other taxes paid by a farmer are indirect. Indirect taxation of savings in agriculture is often recommended, particularly in under-developed economies, because of a small yield from direct taxation as the holdings are small and individual incomes are quite low.

Taxable Capacity

The concept of taxable capacity is useful for judging the reserve capacity of a country for raising taxation and for determining the incidence of taxation in relation to the total capacity and so its oppressiveness or *vice versa*. Public expenditure is rising in nearly all countries; therefore, the question of raising taxation up to a level until its incidence is oppressive has assumed a special significance in most countries.

Sir Josiah Stamp has defined taxable capacity as the margin of total production over the total consumption of the amount required to maintain the population at the subsistence level. According to him, this is the utmost that a community can pay without having eked out a really unhappy and down-trodden existence and without dislocating its organization too much. The terms "unhappy" and "down-trodden," and "dislocation of organization" are subjective and do not yield to any objective measurement. Findlay Shirras defines taxable capacity as the maximum amount which a community can pay without having to undergo an unbearable strain. In this definition too the phrase "unbearable strain" is incapable of objective and precise definition. Findlay Shirras mentions the following factors which affect the taxable capacity:

(i) The Number of Inhabitants. Larger the number, greater is the taxable capacity, provided it is an expanding and progressing community.

(ii) Distribution of Wealth. Larger the inequalities of wealth the larger is the taxable capacity.

(iii) The System. A well-constructed tax-system—a gold mixture of direct and indirect taxes—will yield a large tax revenue.

(iv) The Purpose of Taxation. If the purpose is economic welfare, people will be willing to pay large taxes. Hence the capacity will increase. People will be willing to make sacrifices and abstain from current enjoyment and consumption.

Incidence of Taxes

Impact means the initial burden of the tax --it falls on him who pays. Incidence of tax means the burden of taxes, i.e. on whom the burden rests ultimately. If the person paying the tax cannot shift this burden on anyone else, the incidence of tax is said to fall on him. In case the tax can be shifted, the shifting can be backward or forward. Forward shifting means that the price of the taxed commodity is raised and the incidence falls on the ultimate consumer to the extent the price is raised. Under backward shifting, the manufacturer reduces the price of his cost factors. Backward shifting would result in a reduction of demand for raw materials-labour and other elements of cost entering in business. If the materials and cost factors are used in many industries, a reduction in their demand in one of them would not materially effect their prices. Backward shifting would then be possible only in cases in which the industry subjected to the increased taxation is the major user of a raw material, there is no monopoly among those supplying that material and the industry taxed is not willing to meet the incidence of tax by reducing its profits. Agriculture admits shifting of taxes backward as well as forward.

If the price rises by the full amount of tax, the incidence will be wholly on the consumer. If it rises by less than the full amount, the tax is shared by both producers and consumers. The rise in price is further dependent upon the elasticity of supply and demand. It, therefore, follows that the incidence of tax is divided between the consumers and the producers in proportion to the elasticity of supply to the elasticity of demand. If supply is more elastic, incidence is likely to fall on consumers and if demand is more elastic, it falls more on producers. Speaking generally, we may say that producers shift the burden of tax on to consumers as far as possible by reducing supply, and the consumers retaliate by reducing demand. The success of the process depends on their relative strength to carry this out with the least loss.

If a tax is levied in such a manner as to become part of the cost of production of those units of the total supply which are just on the margin of being produced or not being produced, the tax in the long run will lead to a rise in prices. On the other hand, if the tax is levied in such a manner that the burden falls only on those producers who are earning enough surplus above the cost of production, and they can continue in production even with a reduced surplus, the tax cannot be passed on. Part of this surplus absorbed by tax will not force the producers to go out of production and the prices will not increase.

Agricultural Taxation

Agricultural taxes can be of two kinds. The first category comprises those taxes which the farmer has to pay as a producer and the second refer to those taxes which he pays as a consumer. The consumption in the case of the farmer includes both his personal consumption for living as well as the use of input factors like fertilizers, farm implements, seeds, etc. for agricultural production. In respect of consumption goods required for living, the case of a farmer is not in any way different from the other citizens. He pays those taxes just as any other person. Therefore, only the following taxes are dealt with here:

(1) Tax on land; (2) tax on agricultural produce; (3) tax

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on agricultural income, and (4) miscellaneous policies like fiscal monopolies, purchasing boards and differential exchange rates, which often involve concealed taxation of the agricultural sector and are similar to tax on agricultural produce.

Land Taxes

They are either of the traditional type like those in India and Pakistan or rural property taxes as in Latin American countries. The basis of land taxation is the productivity of land. In many Latin American and the Middle East countries the assessment on land is based on rents. Rent taken as the tax base may be either the net annual value of the land after the deduction of the producer's fair share, or the actual rent received by the landlord. In certain cases, it is based on the total value of land. Many aspects of this tax are in a way similar to that of the rental value base. The value of the land can be regarded as the investment return of the capital value of land. Whether it is the rental or value basis, in final analysis both are derived from the production from land. The rent or value of land is after all determined by its productivity.

Land taxes just like any other property tax were originally intended to tax the landlords. But the extremely weak position of the tenant cultivator has actually resulted in shifting its final burden on to him. Since the tax is levied on area basis at a uniform rate for each unit of the area, say acre, it does not take into consideration the taxable capacity on the basis of size of holding. It is, therefore, a levy on a proportional and not on a progressive basis. It has inflexibility with respect to annual fluctuations in incomes, lacks provisions for exemptions for minimum incomes or family responsibilities. It also does not discriminate between earned and uncarned incomes. Because of these rigidities there is a general feeling for reforms in the age-old system of land taxes.

Justification for Land Tax

The Productive Attribute of Land. In early societies, land was one of the important sources of productive wealth; hence of tax paying ability. Besides this, it was quite easy even for the most backward economy to secure a share from the produce of the farmer for the Exchequer, because land was immovable and could not be concealed.

Ownership Rights of the State in Land. In a number of countries, the State has historical rights in the ownership of land. By virtue of this right alone, the State can claim a share of the produce that may be termed as economic rent. This can be considered invariably as one of the important reasons for most of the ancient societies going in for land taxation. Today, with redistributing land as land reform measures, the Government can again justify the imposition of special taxes on those who are allotted these lands.

Uncarned Incomes. Mill championed the cause of the society by saying that it should have the taxing power to keep unearned gains out of private hands. According to the classical economists, rent was the result of the ordinary progress of the society and tended to augment continuously the incomes of landlords. "They grow richer, as it were in their sleep, without working, risking, or economizing," according to Mill.

But as Wald would argue "only a small portion of the actual rent on today's farm land represents the value of original properties of the soil wherever clearing, drainage, road building or sodbreaking is involved, the 'gift of nature' segment of land value is likely to play a relatively minor role." The argument is further strengthened by Schulz who says: "It is hard to find a situation where some and in most cases a great deal of capital has not been invested and incorporated in land that is being farmed." Much of the land rent, therefore is actually a return on capital invested in maintaining and improving the land.

In a developing economy, with the general progress, the share of agriculture in the national income declines. This leads to a fall in the relative importance of agricultural land, as a source of revenue to government.

Taxation of Income from Land. Since rent from land is a source of income, land tax is justifiable on economic grounds as well. Pigou says that a tax on economic rent is an ideal tax in its "announcement aspect" because its amount cannot be altered by any action on the part of the landlord.¹ It may be argued

¹A.C. Pigou, A Study in Public Finance, 1949, p. 147.

that the effect of land tax in the long run might be to induce less investment in agriculture and the abandonment of marginal lands. But it may also be true that if the farmers decide to maintain their customary standard, they may resort to more intensive cultivation so as to make up the loss. Colin Clark has observed that all those countries where land taxes are high have high level of productivity. Wald thus concludes that "the basic theoretical proposition regarding the superiority of land as a tax base nevertheless stands: a land tax falling on pure economic rent has the advantage of being a tax on an economic surplus; thus being neutral from the standpoint of its direct effects on production.

Benefit Principle. Benefit principle has normally no place in discussions pertaining to taxation. Wald says: "Paying on a *quid pro quo* basis for what one receives is the rule in the commercial world and the exception in government finance. Most of the government's activities are for the benefit of the whole population so that the benefit of any single tax payer is indeterminable."

In spite of all this, land taxes are fully justifiable even on this benefit principle. Agriculture being in a backward state in most of the underdeveloped economics calls for huge public investments. During the first two Plans in India, for example, the investment in the rural sector was of the order of Rs. 8,860 millions. All this is in a way for the benefit of the agricultural classes who should then be required to contribute towards the developmental activities by way of paying land taxes.

Produce Taxes. Taxation of agricultural produce when marketed, somewhat similar to the ancient institution of tithe, has been imposed recently, often in substitution for land taxes. This tax has been used mainly:² (a) to avoid the difficulty of the cadastral survey, preparation and revision; (b) to simplify the assessment and collection procedure; (c) to establish some flexibility in the tax by the automatic re-assessment of the tax based on small producers of each harvest; and (d) to allow indirectly a basic exemption to small producers who generally market only very little as their surplus output is not large.

²Hustzell P. Wald, Papers and Proceedings of the Conference on Agricultural Taxation and Economic Development, p. 293.
Taxes on produce are found often in the Middle East countries, particularly in Iraq and Syria, where agricultural produce tax is a descendent of the traditional Islamic tithe of Ottoman days. Produce taxes while easy to collect from a few market places than from widely dispersed farms, are liable to be evaded on a large scale. Unless a marketing system is evolved in which no supply can escape the attention of authorities, their administration is a tough problem. It is not at all easy to keep a complete watch on supplies. If a watch is organized in known markets, unknown markets spring up to avoid the produce tax. The other drawback of this tax is the fluctuation in the total revenues of the State from year to year. Production in agriculture is highly variable depending upon a number of natural factors—weather, rain, hailstorms, drought, flood, and fire. State cannot estimate with any certainty the returns to the Exchequer.

Produce taxes may be in kind like those in China and some other countries or they may be in cash based upon the value of the produce. Another form of the tax in some of the countries is the tax on the exports of some of the major agricultural commodities. Latin American countries, for example, have a tax in the form of export duties on sugar, coffee, banana and cotton. Export duties are rather easy to collect and cost less in collection. This duty is disadvantageous to the export trade as it raises the price of the produce so taxed. Countries without such tax on their export products may thus gain an advantage over those which have imposed this duty. Countries resorting to such taxation have accordingly been induced either to vary their export taxes widely and rapidly or to institute a sliding scale system with rates which change as fluctuations in price in the world market provide a larger or smaller profit margin to the producers.

Agricultural Income Tax

Land and produce taxes already discussed are not progressive. In order to make taxation more broad based and progressive, governments have at times resorted to agricultural income tax. This may be of two types. In one, income from agriculture is either singled out as a whole or is estimated on the production of certain commodities. Besides the land tax which every farmer pays, a progressive taxation on a specific portion of the income, as mentioned above, is levied. A clear example of such taxation is the one of plantation crops like tea and rubber. Of the total income from plantations 40 per cent is considered as non-agricultural income and is taxed as such under the Central Government income tax. The remaining 60 per cent is taxed as agricultural income where there is a local agricultural income tax system. The second type is one of taxing agricultural income unless scheduled in global income tax. Total income from agriculture in this case is subjected to the normal income tax rules of the country. It may or may not be in addition to land revenue.

Because of administrative and some other problems, many of the underdeveloped countries find it difficult to resort to the latter type of taxation. This does not mean that such taxes are to be ignored. Rather, the administrative problems should be overcome with experience.

Fiscal Monopolies

These are not a tax in the strict sense. Under this system, the farmer is required to part with the whole or part of his produce to government at the fixed prices. Government pays but the purchases are in the nature of a compulsory levy. Having come in possession of the commodity, government has more or less a monopoly in it and can dispose it of later at any price it likes. In the Middle East countries the cultivator is forced to part with a portion of wheat to government agent at prices fixed by the government. Wheat thus collected is converted into flour in government mills and sold to the city bakeries at a fixed price. They in turn have to sell the bread within a ceiling fixed by the government.

Marketing Boards

In a number of countries, governments purchase farm produce from farmers at fixed prices for export. The purchase and export are made by authorised Marketing Boards or even by State Boards. Such boards which in certain cases may be just co-operatives have varied objectives before them. In some cases, it is to collect revenue, while in others it is to stabilize prices. Sometimes the profit so earned is used for improving production and for social and economic welfare of the people.

In Burma, the Government purchases rice well below the export price and earns a revenue for the State. Similar is the case in Argentina, West Africa, and Uganda. In Nigeria, Togo, and Ghana the farmer is required to sell his produce to the licensed dealers and brokers at fixed prices. These brokers have to pass on the whole of their collection compulsorily to Marketing Boards which ship the commodity abroad. The declared objective is the stabilization of prices. But some of the accumulated profits are also utilized by the Regional Development Boards as grants for public utility purposes and for agricultural and industrial development.

Multiple Exchange Rate Systems

The system of multiple exchange rates was evolved by Germany when she failed to pay her debts in foreign exchange after the Hoover moratorium of 1931. The foreign owners were allowed to sell off equivalent quantities of marks to other foreigners for designated purposes and at rates which would reduce German obligations to foreigners at small cost in German resources. German marks were then selling at different rates for different purposes in the same or different countries.

The system is thus a part of the exchange control policy in some of the soft currency countries and has large element of taxation. Where a low rate is set for the agricultural produce, the difference between the market price and the official rate must be considered as a tax collected from the agricultural exporters. The exact amount of the 'tax' can, however, be determined by deducting from it the sum lost due to the favourable exchange rate granted for certain imports to offset the low prices paid to the producers.

Multiple exchange rates which affect farmers are quite common in Latin America, Argentina, Columbia, Equador, Uruguay, and Venezuela. Iran is another country where they are in force. In certain countries, such multiple exchange rates function in favour of the agricultural producer. The export of cocoa and coffee in Venezuela is promoted by preferential rates of exchange. The country has been able to export high cost coffee even in periods of marketing difficulties.

The Nature and Uses of Agricultural Taxation as an Incentive Device

Agricultural taxation as an incentive device is to so order the taxes as to reward desirable and penalize undesirable in agriculture. It may be called an "incentive taxation." At the outset two principles should be noted about it, namely (1) as these incentives relate to agricultural production, the farmer as the producer is the elementary target of incentive taxation; and (2) that incentive taxation seeks to influence economic activity through variations in the tax liabilities of particular tax-payers. Both the principles seem interrelated. Because of the level of tax being low, the incentive impact of variations in structure may be weak. Devices as described above and agricultural taxes may be regulated to provide incentive to work, to invest, to discourage under-cultivation, to channel agricultural resources into particular crops, to improve conditions of land tenure, to discourage land speculation, and to alter the relationship between agricultural and other sections.

(1) To Increase Incentive to Work. The tax on high marginal rates of income is either reduced or a progressive tax system is replaced with the proportional one which is fixed in amount. The goal of such policies is to levy taxes in a manner as to minimize the substitution effect of taxes. These policies also lighten the burden on increased output from land and provide incentive to increase the productive capacity per unit of land.

Tax measures having the above objectives in mind may be found in such widely varying settings as Korea, Yugoslavia, and the Soviet Union. Yugoslavia showed its dissatisfaction with the existing system of progressive taxation of farmer's income stating that this system affected adversely agricultural production and that the taxes now would be paid on the basis of the area and quality of land.

(2) To Increase Incentive to Invest. This deals with stimulus to long-run improvements of land and the general approach is to grant exemption or preferential treatment under land, property, and income taxes to improvements in land. For example, New Zealand has granted liberal depreciation allowances under its income tax for initial land development expenditure. Reclamation of waste land by irrigation, drainage, clearance, etc., is promoted in Formosa, certain Indian states, Chile, Iraq, Iran, and Portugal, by special exemptions or preferential treatment under land and property taxes.

But sometimes it is suggested that, in contrast with the above methods, which shield the rewards for investment in agriculture from discouraging taxes, landlords be taxed so heavily that they are compelled to increase their income through capital improvements on their land. For this purpose, graduated land tax, levied on capital values rather than on current output, has been suggested.

Specific penalty taxes may also be used to force investment. For example, Malaya imposes an excise duty of $1\frac{1}{2}$ pence per pound of rubber from plantations which fail to plant a specified percentage of their acreage annually.

(3) To Discourage Under-cultivation. Taxes may sometimes be imposed to get idle land into cultivation or to bring an upgrading of its utilization. In a special set-up where land is held for prestige purpose or where speculation in land is stimulated by inflation, large holdings of cultivable land are likely to be held idle or grossly under-cultivated, side by side with pitifully small and overworked holdings. Specific penalty taxes have been imposed in certain countries of Latin America to cope with this situation. Panama has instituted a progressive super tax over and above the property tax on untilled land. Brazil levies penalty taxes on lands which are not used, or not fully used for some branch of agriculture.

An International Bank mission to Columbia found that fertile lands in the valleys were used for grazing while inferior lands on hillsides were ploughed by the poor farmers and suggested a steep progressive land tax designed to stimulate better land utilization. The rate of tax was inverse to the ratio of actual net income from the land to its current market value.

(4) To Channel Agricultural Resources into Particular Crops. These measures, by taxing or subsidising particular crops, seek to transfer agricultural effort into channels which serve certain aims of national policy. For example, crops, which are a lucrative source of foreign exchange, may be favoured.

Tax rates may vary for different crops and different types of fruit trees. Some countries give special treatment to crops which

take many years to mature. Cambodia exempted mulberry trees from the land tax as a stimulus to silk culture during the period between the two world wars.

Discriminating export taxes and multiple exchange rates may also influence the production pattern. For example, Venezuela stumulates the growing of cocoa and coffee by an exchange subsidy.

(5) To Improve Condition of Land Tenure. Taxes under this category may fall into two groups, namely (i) taxes which seek to break-up large States or discourage accumulation; and (ii) taxes which promote certain forms of ownership. Measures to discourage accumulation of large land holdings or break-up the existing ones may take the form of both specific disincentive taxes and progressive taxes which fall heavily on large ones. Taxes in the first sub-group are the taxes on absentee landlords levied in Argentina, New Zealand, Taiwan, and Australia. Steeply progressive death duties also force owners to dispose of part of their holdings in order to meet the tax liabilities at death.

Some wealthier persons hold land for speculation purposes; heavy taxes on speculative gains would tend to discourage such holdings.

Ownership for actual tillers of soil, or for cooperatives is the cry of the day and is recognized as an integral part of the land reform programmes. One form is to give special tax-exemption or tax reduction for a period of years after the farmer acquires title in land and another way is to tax rents more heavily than owner incomes under an income-tax. A number of countries, *e.g.* Czechoslovakia, India, and Yugoslavia give special tax exemptions or reductions to farms which are operated cooperatively.

(6) To Discourage Land Speculation. Some taxes are imposed to deter speculation for the ethical purpose of preventing unwarranted gains derived either from economic development or inflation, while some are levied to encourage the active use of land, and help discourage large accumulation of land. Denmark and Portugal levy highly progressive land value increment taxes at the time of transfer. Imposition of a special capital gains tax would also have deterrent effects on land speculation. The International Bank Mission to Columbia recommended that gains be divided into various categories, with capital gains from unimproved land being

taxed at a particularly high rate as compared to gains from sales of industrial plants.

(7) To Alter the Relationship between Agricultural and Other Factors. Although the influence of taxation on the relation between the agricultural and other sectors of economy is mainly a function of the flows of government expenditure as between the two, incentive effects of taxation will also effect the relationship. It is said that the labour, which is made surplus by technological and capital improvements, is the elementary source of capital formation, from domestic sources in underdeveloped countries. The problem is not only to provide employment to this surplus labour, but also to procure from the agriculturists the food which this labour formerly consumed as part of the agricultural force. A special capital tax on the farmers might be used for tapping the economic surpluses, which may exist in the agrarian section.

After having gone through the nature and uses of taxation as an incentive device in agricultural development, we should make general observations and preliminary impressions that grow out of such a review. Firstly, as we survey the tax-devices as a whole, other groupings of these devices emerge. For example, one type of measures seeks to remove tax disincentives to desired activity, another puts tax barriers to undesirable activities.

Secondly, we observe that developing agricultural countries especially in Latin America—take incentive taxation very seriously in application to agriculture. We also see that taxes have aroused more interest as an agricultural incentive device in the less developed economies in the world.

Thirdly, on examination of the various incentive tax measures, it seems that many countries have adopted them on an *ad hoc* basis rather than carefully integrating them in a consistent economic and social programme. A simple example in this respect is of land reform programme. On the one hand, there are tax measures which seek to break up large productive units in the process of converting tenants into land holders; while, on the other, there are recommendations for cooperative farming societies to reconcile large-scale operations with small-scale ownership.

Fourthly, coordinated economic policy calls for careful inte-

gration of incentive effects with income effects. For example, it is evident from above that a land value or property tax may be attractive from an incentive point of view in a setting of underdevelopment; yet the income effect of such taxes would be inferior to those of a progressive income tax, the yield of which expands as an economy develops. It may sometimes be necessary to supplement one type of measure with the other. Moreover, incentive tax devices may be unworkable or ineffective in underdeveloped countries to implement policies designed to move surplus labour out of agriculture, or to increase rural savings; to achieve the desired ends may be possible only by restricting consumptions and generating compulsory saving through increases in the general level of taxation.

Fifthly, administrative difficulties sometimes prove insurmountable because the use of taxation for incentive purposes in the agriculture sector presupposes a great deal about the nature of the incentives which govern agricultural activity: the character of tax administration, nature of marketing facilities, and the effectiveness of taxation as a tool of incentive policy in preference to subsidies, government direct control, or other forms of governmental intervention. Official reports and other literature do not say much about the administrative difficulties about them.

CHAPTER NINETEEN

AGRICULTURAL PLANNING

ACCORDING TO Dickinson and Ropke, economic planning means the making of major economic decisions by a conscious determinate authority on the basis of a comprehensive survey of the economic system as a whole.

Economic planning is based on the economic, social, and ideological objectives of a nation. Broadly speaking, it comprises making an inventory of resources and rational allocation of productive factors for the realization of the objectives set by a country. The concept of planning is not new. The Hindus, for example, had a very comprehensive plan for social life and there was a rigid code governing economic activity beginning from the duties of the King down to the retail sale of goods. Plato was an outright planner. He had a complete plan of economic and social life including selective breeding of population. His system involved utmost regimentation. The Mercantilists had also a plan of their own : how to increase the wealth of the community through a complicated series of State regulations. The underlying assumption of Adam Smith's economy, based on private ownership of capital, was that each individual left to himself tries his best to further his economic interests and in so doing furthers the interests of the whole society. In the famous pamphlet, The End of Laissezfaire, published shortly after World War I, Keynes declared that it was no longer possible or desirable to leave the fate of millions of people and their well-being to the free working of the economic forces.

The end of World War II brought in its wake freedom from colonialism for a large number of countries in Asia. Face to face with a stagnant economy, the first and foremost task of the leaders of emerging countries was to think in terms of initiating schemes of economic reconstruction. Capitalism and unfettered private enterprise have lost their appeal even in the West. Today, planning is accepted as an effective tool for canalizing economic forces towards economic development. Although its nature and extent differs from clime to clime, planning is an important State policy in democratic and totalitarian States alike.

All underdeveloped countries are taking recourse to economic planning for their economic development within a reasonable time limit. Leibenstein¹ has listed the following as the characteristics of underdeveloped areas.

General. (1) A very high proportion of the population in agriculture, usually some 70 to 90 per cent. (2) "Absolute overpopulation" in agriculture, *i.e.* it would be possible to reduce the number of workers in agriculture and still obtain the same total output. (3) Evidence of considerable "disguised unemployment" and lack of employment opportunities outside agriculture. (4) Very little capital per head. (5) Low income per head and, as a consequence, existence near the "subsistence" level. (6) Practically zero savings for the large mass of the people. (7) Whatever savings do exist are usually achieved by a land-holding class whose values are not conducive to investment in industry or commerce. (8) The primary industries, *i.e.* agriculture, forestry, and mining are usually the residual employment categories. (9) The output in agriculture is made up mostly of cereals and primary raw materials, with relatively low output of protein foods. The reason for this is the high conversion ratio between cereals and meat products, *i.e.* if one acre of cereals produce a certain number of calories, it would take between five and seven acres to produce the same number of calories if meat products were produced. (10) Major proportion of expenditure on food and necessities. (11) Export of foodstuffs and raw materials. (12) Low volume of trade per capita. (13) Poor credit facilities and poor marketing facilities. (14) Poor housing.

Basic Characteristics in Agriculture. (1) Although there is low capitalization on the land, there is simultaneously an uneconomic use of whatever capital exists due to the small size of holdings and the existence of exceedingly small plots.

There can, however, be different degrees of planning. Countries like those in Western Europe, while retaining the fundamental

¹"Economic Backwardness and Economic Growth," Studies in the Theory of Economic Development, pp. 40-41.

structure of capitalism have tried to introduce more order and greater stability into individual actions through voluntary action. Then there is the extreme case of the USSR where all the means of production are owned by the State.

The objectives of planning would depend upon the immediate as well as ultimate needs and ideologies of a country. In general, planning aims at increasing the volume of output and employment and the all-round raising of the standards of living. The proper direction of economic activity is also intended to speed up the process of economic development which, if left to private initiative, may take long to attain. In India, for example, two objectives have guided India's planned development-by democratic means, a rapidly expanding and technologically progressive economy, and a social order based on justice and equal opportunities to every citizen. Under a planned economy, economic development gains momentum and the tempo of progress and advancement becomes more rigid and sure. This acceleration of economic development leads to a more equitable distribution of wealth, and people get more opportunities with less difficulties. Communities find their life better provided, well-guarded, and soundly lived. The accent in India is on raising the standard of living, enlarging opportunities, promoting enterprise, and creating a sense of partnership among all sections of the community.

The question of technique or type of planning to be adopted depends upon the basic approach that a community prefers for the realization of its objectives.

It is clear that in the transformation of the economy that is called for, the State has to play a vital role. Whether one thinks of the problem of capital formation or of the introduction of new techniques or of the extension of social services or of the overall realignment of the productive forces and class relationships within the society, one comes inevitably to the conclusion that a rapid expansion of the economic and social responsibilities of the State will alone be capable of satisfying the legitimate expectations of the people. This need not involve a complete nationalization of the means of production or elimination of private agencies in agriculture or business and industry. It does mean, however, a progressive widening of the public sector and a reorientation of the

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private sector to the needs of the planned economy. This may, in other words, be termed as an enlightened mixed economy where both the private and the public sectors co-exist.

Agricultural Planning

Agricultural planning refers to organizing and using of resources to maximum advantage in the agricultural sector and allied activities within the overall national economic plan. Agricultural planning assumes special significance in countries where agriculture provides a major occupation to the people and is the mainstay First, economic development is of the national economy. characterized by a substantial increase in the demand for agricultural products and failure to expand supplies in pace with the growth of demand can seriously impede economic growth. Secondly, a capacity expansion of agricultural products can be one of the promising means of increasing income and exchange earnings, particularly in the earlier stages of development. Thirdly, the labour force for manufacturing and other expanding sectors of the economy is drawn mainly from agriculture.

Objectives of Agricultural Plans. Like the overall economic plan, the agricultural plan also has a number of broad objectives. The most important objective in the underdeveloped economies is to step up agricultural production to meet the rapidly growing demand. Other objectives could be the improved nutritional standards, increased income and employment for the farming community and mobilization of sufficient surplus for accelerating economic growth. But these objectives are largely dependent on the attainment of the primary objective of increasing agricultural production.

Fourthly, the unexploited potential in this sector is large, the capital-output ratio is low and the gestation period is short Under the circumstances it is advantageous to have a maximum exploitation of the agricultural sector. Increased output of the various agricultural products enables the rapidly expanding population to raise the standards of living. Surpluses emanating from the sector can help to earn the much needed foreign exchange for the rapid growth of the economy. Fifthly, exploitation of wealth in agriculture calls mostly for low opportunity cost input. The use of high opportunity cost inputs is relatively smaller.

Therefore, the demand on foreign exchange is much smaller than is the case with industrial development. Low opportunity cost inputs refer to those internal resources which in the current economic system are not being used to their full capacity. For example, in India in densely populated areas rural labour remains underemployed and faces total unemployment over considerable periods during a year, while its underemployment is a permanent pheno-Inputs which are short in supply and for which there is menon. a competitive demand from a number of productive activities and especially those which have to be imported are treated as the high opportunity cost inputs. The raising of productivity in agriculture, no doubt, calls for the use of high opportunity cost imputs such as fertilizers; steel for machines and implements and equipment for hydro-electric projects; water pumps, and tube well, for irrigation; nonetheless human and animal labour still constitute a major part of the total input. Another point to be remembered is that with small additional expenditure on high opportunity cost inputs, agricultural productivity, which is at low level currently in most underdeveloped countries, can be raised appreciably. This means that the return from such investment in agriculture is attractive in underdeveloped economies.

Quite often there are controversies raised on priorities in regard to agricultural and industrial development. In fact, the proper approach is to aim at a balanced development of the two and the decision on priorities, if at all, should be based on the special features of the national economy of individual countries. The foregoing discussion makes it quite clear that agricultural development is an aid to other sectoral developments rather than an obstruction. In India, the shortage of food and foreign exchange further emphasizes the need for increased agricultural production.

Agricultural planning in character basically more is regional and central. The local and relocal than gional soil and climatic characteristics have a large share in determining the type of farm produce to be raised in each area. Subject to such limitations, the central or national plan may coordinate and balance the supply of and demand for agricultural commodities at the national level. It also ensures the use of physical and economic resources in the best national interest overriding regional and local considerations. Further, development of resources, through multipurpose river valley projects, soil conservation, flood control, and production of fertilizers, insectic'des, machines can be tackled better on a well-coordinated central planned basis than on individual, state, or regional level.

The task of planning in agriculture is beset with greater difficulties than is the case with other sectors. The unit of production is usually small and spread over a wide area. Farmers, as a rule, are conservative throughout the world. Most old countries have inherited a number of inhibitions to incentives in agricultural production—a product of the development of social and economic system in the past. The examples are the land system in which the ownership and cultivation rights are often separated and the moneylending system, which fails to plough back the savings of the community to the development of agriculture in proper direction and is unable to offer adequate finance to farmers to meet their needs. These inhibitions have to be combated with and removed through appropriate land reform measures and institutional arrangements in the field of credit and marketing.

Agricultural development has to be brought about through contact with millions of farmers, majority of whom are illiterate. This emphasizes the need of a sound organization of agricultural extension service supported with a comprehensive programme of research appropriate to providing right answers to farmers' problems in different localities and also supplies of agricultural requisites such as improved seed, implements, and fertilizers which private trade is not able to make available in desired quality and quantity. Further, for making farmers accept the changes needed for agricultural progress, additional effort is needed in the direction of community development programmes, say, of adult literacy and self-help, price stabilization and increased flow of consumer goods to the rural areas. It should be obvious now that any agricultural plan could not be considered complete if it fails to give adequate thought to creating the necessary conditions for the successful introduction and adoption of technical changes and management improvements aimed at agricultural progress.

While the broad objective of planning is to step up the out-

put of agriculture, balancing of the demand and supply of various commodities is the more specific objective. It is quite possible that the demand of a specific commodity outstrips the supply in a short period. Imports will have to be arranged in this situation or and, if possible, physical controls through the operation of price. Some sort of a fiscal mechanism may have to be imposed. The best solution would, all the same, be a careful study of the demand and then matching the demand with the supply. The demand estimate should allow fully for the changes in demand in a dynamic economy. The success or failure of an agricultural plan depends a great deal on the correctness of the two estimates.

Demand Estimates

The method to be adopted for the estimation of the demand for a particular commodity depends upon the nature of the commodity. In the case of foodgrains, the primary determining factors would be the rate of population and income growth. The same considerations apply to milk, tea, coffee, and to a lesser extent to cotton and oilseeds. For commodities like rubber and jute, what is known as the "end use" approach will apply. However, no hard and fast rule can be laid down for the preparation of various demand estimates. Some commodity groups are discussed here.

Targets for Foodgrains. While fixing a target for foodgrains, we first need data about the growth of population and national income. It is not sufficient to have estimates of just the global rate of population growth only. A breakdown between rural and urban population and the distribution of the same by age and sex groups is also necessary. With changes in birth and death rates, the proportion of population between various age groups also changes. Since levels of food consumption vary as between rural/urban people, age as well as sex groups, such detailed estimates of population become necessary.

Demographic forecasts are generally hazardous. It would, perhaps, be better if an attempt is made to have two forecasts giving the high and low estimates. Demand forecasts can then be calculated on the basis of each, thus providing a range to fix the actual target.

The rate of income growth has to be determined with due

consideration to existing and future investment pattern and broad objectives before the planners. The gross national income accruing at the end of the targetted period can be counter-checked with the product targets at constant prices. Both targets must be finally decided; the rate of income growth will thus automatically emerge.

On the basis of consumption pattern between various income groups at a point of time (cross section data), the elasticities of demand for various income levels can be calculated for any area.² Once the elasticity co-efficient for a particular commodity is estimated accurately, with a given percentage increase in income, the total demand for the commodity can be easily calculated.

Since in most of the developing countries there are possibilities of wide shifts in rural/urban populations, separate elasticities for rural and urban areas would be much better. For the farm population, a useful distinction may also be made between the demand elasticity for home produced and purchased food. An allowance for changes in price can also be made on the basis of price elasticity.

While applying these refined formulae, one has to be very selective in the use of basic material. For a major portion of the world, reliable data on "household consumption surveys" are not available. We need accurate information about the quantity and value of the commodity consumed as between various income groups at a point of time and over a period. This places a limitation on the practical applicability of this approach for projecting the demand for foodgrains or other consumption items. One has, therefore, to use the available data in different parts of the world with caution. This can, under the circumstances, at best, serve as a broad direction. For actual physical targets, a number of other exercises will be necessary.

If the targets are being fixed for a long term plan, e.g. 15-20 years, income or expenditure elasticity approach may not be applicable at all. The best course in such a situation would be to find out the expenditure level for rural and urban population separately at which the consumption curve for the particular commodity flattens for all further increments of income. This is more important for cereals. The corresponding figures for population in these very expenditure groups can also be found out for the

2 Time series data can also be used for the same purpose.

base period.

If during the period under consideration, all the people below the margin are likely to cross the crucial level, expenditure elasticity for the projected period can be considered as zero for the country as a whole for determining the upper limit of the target. This is because those in the upper income brackets have a negative expenditure elasticity for foodgrains; their per capita expenditure being reduced with every increment in income.

The position will be clear when we realize that the consumption of foodgrains is hardly 6 ozs per capita per day in high income countries like the USA, the corresponding level for India is 17 ozs. It is even a little higher for some other countries. The per capita consumption of cereals in rural India is computed at about 17 ozs, as against 12 ozs, for urban areas.

While fixing the actual targets for the projected periods, one has, however, to take into consideration the basic objectives before the planners. Every long term plan would normally have before it the objective of providing some minimum nutritional level at the end of the plan period. Some sort of nutritional norms will then have to be determined, in the context of work done in the area concerned as well as other countries. Once such norms have been decided, the cost of the reconstituted food basket can be calculated at constant prices. It can then be examined on the basis of the existing household survey data whether or not it would be possible for an individual to spend that much of the money on the various food items. Once the estimated cost of the reconstituted food basket fulfils these tests, one can safely go ahead to fix the various targets not only for all foodgrains, but also for all the remaining food items. Necessary adjustments will, however, have to be made for certain commodities where it is found that the production programme cannot be expanded accordingly because of technological limitations.

Besides human consumption, foodgrains are also required for feed, seed, and wastage. Seed requirements and wastage can be calculated on the basis of existing information which is not difficult to obtain. Feed for cattle is, on the other hand, a difficult estimate to make. In India, for example, all the estimates of feed, seed, and wastage are put at $12\frac{1}{2}$ per cent of production. This is, however, not correct. In all developing economies where special attention is being paid to the expansion of animal husbandry and poultry farming, the consumption of foodgrains for feed purposes would increase much faster. A rough calculation would show that in 20 years feed, seed, and wastage may constitute some 30-35 per cent of the total production as compared with the present estimate of $12\frac{1}{2}$ per cent,³ the increase in demand for feed being mainly responsible for the disparity in the two estimates.

The final target will also have to take into consideration the requirements for reserve stocks —both to ward off natural hazards as well as pipeline stocks for the smooth working of the economy.

Other Consumption Items

Besides the various food items like cereals, pulses, potato, fruits, vegetables, sugar, milk, meat, eggs and fish, there are other items like oilseeds, tea, and coffee which enter into direct consumption. Cotton, next to food, is needed for clothing. In all these cases also, the first approach would be the co-efficient of elasticity of demand.

Oilseeds. The target for oilseeds has to be based on human requirements determined like foodgrains according to elasticity coefficients and nutritive norms and the industrial requirements on the basis of 'end use' approach.

Tea and Coffee. These two items figure prominently in the export trade of a country like India and even other producing countries of the world. It would accordingly be necessary to make a thorough study of the future world demand and production programmes in all the producing countries of the world. Such studies are needed for all those commodities which enter the export market. Other examples are cotton for textiles and jute manufactures intended for export. The export of oilseeds, oils, and foodgrains has also to be examined similarly.

Countries which are importing these or other commodities in part or in full and which find that they cannot be self-sufficient by the targetted period because of one or the other reason, can

³ P. C. Bansil, "Feed, Seed and Wastage Rates" Indian Journal of Agricultural Economics, Vol. XIV, No. 3, 1959.

reduce their demand targets for the home grown portion by the quantity expected to be imported. In any case, it would always be better to prepare separate estimates for home requirements and foreign trade—imports/exports. One has to be careful with regard to foreign trade as there is the danger of being optimistic in this respect in the absence of knowledge about the potentialities of production in other countries. Every developing country is trying to earn as much foreign exchange as possible and they are all virtually having a race among themselves.

Industrial Raw Materials. These include commodities like rubber, jute, and various oils intended for industrial uses. In all such cases, the target may be fixed on the basis of the "end use" approach. Vegetable oils may be used for the manufacture of soap and varnishes, jute for gunny bags, sacking or carpets, and rubber for tyres/tubes, shoes, and innumerable other items. The end use method consists in assessing the projected demand for the major groups of end-uses and subsequently translating this demand into that of agricultural commodity concerned by applying appropriate conversion ratios.

Care has to be taken practically in all such cases about the competition from substitutes. Jute bags, for example, have to face a serious threat from paper bags and natural rubber from synthetic rubber. Correspondingly, there may be new uses being found by science for these raw materials. All such considerations will have their due weight in estimating the future demand.

The estimates have to be reviewed constantly. The multifarious type of data needed for the formulation of estimates are never cent per cent reliable even in the most advanced countries. There are fundamental snags in the statistical information and any subsequent improvement or change in it affects the calculations based on it.

Production Potential

Backward economies embarking upon planned development of agriculture and allied sectors are characterized by persistence of low yields per acre as well as per man in agriculture.

Low yields can be explained by the fact that, firstly, some

of the capital found in advanced agricultural countries may not be of a kind for which we can substitute labour which we have in plenty. Secondly, advanced countries may use superior agricultural techniques not in use in backward ones. Finally, on an average, the quality of cultivated land may be superior in advanced countries. This is because in backward countries, the margin of cultivation is carried much farther on account of a high population pressure and lack of employment opportunity in the non-agricultural sectors.

Under these circumstances, every action taken for the improvement of agriculture sets up counter forces that work towards a return of the quality of management to its former level—low quality equilibrium level. Again, because of the low income of the cultivator in these countries, he is in a vicious circle forcing him to a low level of productivity. In the initial stages of planning, therefore, one has to guard against putting the targets high. Some of the preliminary steps in working out the production potential are discussed below.

Extension of Cultivated Area. One of the immediate measures for increasing production would be the extension in the area under cultivation. If reliable data pertaining to land utilization are available, well and good. In their absence some sort of quick land utilization survey should be conducted and an estimate made about the possible new area that can be put under the plough. Total cultivated area can also increase as a result of multiple cropping because of additional irrigation facilities and production of short duration crops. The allocation of the new area as between the crops can, as a first exercise, be made on the basis of the existing pattern. But changes can be made in the light of priorities attached to different crops. Agro-climatic conditions in the area concerned will, however, have to be given due weight and consideration.

This having been done, acre yields in these areas can be considered at the current rates and additional production for different crops worked accordingly.

Intensive Cultivation. Major increments in the production potential would, however, be possible from intensive measures of cultivation which are: (1) additional irrigation supplies; (2) application of manures and fertilizers; (3) use of improved seeds; (4) use of improved implements and improved methods of cultivation; (5) plant protection measures; and (6) better management.

These are what we call as the various input factors. Some sort of rough yardsticks for each of these factors have been worked out by agronomic trials based on single factor approach. The work done in India shows that one unit of nitrogen, for example, gives ten units of foodgrains.⁴ Similarly, improved seeds are estimated to give 10 per cent additional production and an irrigated acre, one-fifths of a ton of foodgrains. But this approach is defective in the sense that productivity in the field is actually the result of all the factors combined and the experimental results differ considerably from the yields actually obtained by farmers.

There is an urgent need for building sufficient information on potentialities of output increases in various areas on the basis of crop cutting experiments and farm management surveys with adequate samples of farm holdings. Once such information is available, the total potential of agricultural output can be estimated on the basis of efforts and investments planned to raise agricultural output in the form of fertilizer, irrigation, better cultivation practices, improved varieties, plant protection measures, and educational programmes aimed at improving the farmer's knowledge of improved farming techniques and proper management.

CHAPTER TWENTY

AGRICULTURE IN A DEVELOPING ECONOMY

THE STUDY of agricultural economics has received scant attention in India in spite of the fact that her economy is predominantly agricultural. This, in no small way, is responsible for wrong planning and not getting the expected results from schemes like those of IADP* and intensification of agriculture in general. After large sums have been spent and considerable time, nearly two decades, lost one discovered such simple axiomatic truth as that the spreading of limited resources and efforts too thinly over vast areas has resulted in their being frittered away without creating even an impression. Agricultural economic studies would show that the way to success does not lie in tackling the various agricultural problems in isolation, but in a comprehensive and integrated approach on all aspects of village life. The studies would also help in pointing out the right priorities, e.g. between the multipurpose river valley proiects. reclamation of land, minor irrigation schemes, and intensive cultivation of the land already under the plough.

With an adequate provision for agricultural economic research, the above lessons could have been learnt well before launching the "Grow More Food" campaign and other allied activities or during fairly early stages of the implementation of the various Central and State schemes launched since 1942. The success of any agricultural plan rests very much on the formulation of sound policies for which we need basic knowledge of agricultural economics.

Agricultural economics can help in formulating a correct approach and sound policy in regard to several momentous agricultural problems facing the country; in the evaluation of results achieved, in bringing to the surface various drawbacks and defects in the implementation of development programmes, and suggesting the needed reforms.

*Intensive Agricultural Development Programme

Agrarian Reforms

There has been a countrywide spate of agrarian reforms. A number of Committees have succeeded in producing reports of big and small dimensions. The problem of land has also engaged the attention of the Planning Commission since its inception. But are we any wiser for all this? There is little reliable information in the country on the size of land holdings; distribution of cultivators and cultivated area in different size groups of holdings; relationship between size of holding, yield, and agricultural efficiency; and returns from various types and systems of farming on regional basis. Only in the last decade an effort was made to gather such information on a systematic basis through the farm management surveys, yet a considerable gap remains. In the absence of such information it is but natural that the discussions and proposed solutions of land problems have so far been in the nature of generalizations based on guesses or half-truths. There is even now as much controversy and conflict of opinion as ever before on numerous burning land problems of the day, namely, redistribution of land, system of farming in relation to agricultural efficiency and production, *i.e.* individual versus co-operative, collective or State farming, ceiling on size of holdings, optimum unit of cultivation, consolidation of holdings and the future of part-time small-holders—whether their continuance is to be encouraged or their existence is justified.

The Planning Commission in the First Plan made recommendations for ceiling on holdings at three times the family unit or work unit which a family of average size could cultivate with such assistance as is customary in agricultural operations. The fixing of plough unit or work unit is not a simple matter as agricultural conditions differ so widely in the different regions of India. In an intensively cultivated area the work unit would be smaller than that in a region of extensive farming. The size of the average family itself can vary greatly. Then there are the questions: Should we not take into consideration the standard of living in placing a ceiling on the holding? What will be the reaction of such a ceiling on the institution of joint-families—a characteristic feature of our social life and an economic necessity due to very limited openings for employment of the surplus population. The economic and social repercussions of disintegration of the joint-family system cannot be treated lightly. Answers to these questions need careful study of the average family, agricultural conditions and returns from land in various agricultural regions.

Any attempt at solving agrarian problems mentioned above should have been preceded by an effort to collect all the relevant information and its patient study. This alone would have helped in defining and determining the exact nature and magnitude of the problems. An attempt at prescribing remedies before a proper diagnosis is likely to misfire. M. Cepede very aptly states, "Land reform is a grave matter which should not be undertaken lightly. It should be preceded by extensive studies covering every economic and social aspect, studies which show not only what solution appears best but also what the different groups of the population wish for and are willing to make efforts to achieve."

Necessary research in both economic and social income from agriculture should enable us to determine clearly the optimum unit of land for different regions from the point of view of both agricultural efficiency and social justice. It should also indicate in what areas and to what extent the existing pattern of land distribution is nearest to this approach. A study of size of holdings and not ownership will indicate the real necessity and actual scope for redistribution of land. Before deciding upon any statutory measure for redistribution of land, the rate of sub-division of holdings influenced by the inheritance laws and other agricultural economic factors should be worked out. No fresh legal measures may be necessary, if, even normally, sub-division, especially of large landed property, is taking place at a speed considered satisfactory from the viewpoint of redistribution of land.

The distribution of land holdings in different size groups will indicate which regions need more emphasis on co-operative farming. An objective study of the working of experimental cooperative farms and peasant farms is needed most urgently to determine to what extent the envisaged theoretical advantages of internal and external economies and increase in agricultural production can be achieved through co-operative farming as compared with peasant cultivation. To what extent does the loss of individual incentive and the resulting deterioration in managerial efficiency on a co-operative farm upset the realization of other advantages usually associated with large scale unit of production?

The Planning Commission has stressed the need for consolidation of holdings and the drive for it has been launched on a compulsory basis in the Punjab and Uttar Pradesh. Several other States have also initiated some such measures. Consolidation of holdings involves the exchange of land among farmers, for which the land belonging to one has to be equated with the land belonging to another. Besides the area of land, several other economic factors, e.g. fertility, situation, irrigation, drainage and other improvements, slope, shape and size have to be taken into account. It is difficult to satisfy the farmers that the land allotted to them fully compensates for the loss of land transferred from their possession to others. On this score there is always great friction among them and this leads to a considerable delay in the implementation of the actual plan of consolidation. In Sweden, Finland, and Germany a very elaborate "point scale" has been developed for the evaluation and classification of land in several groups. Various factors are assigned points according to the weight and significance attributed to them in regard to their influence in determining the productivity of the land. The use of such a "point scale" method in evaluating the land for the purpose of exchange in connection with consolidation will not only minimize chances of corruption arising out of less scientific and more arbitrary methods of land evaluation but may also succeed in lessening the dissatisfaction of the farmers and hence in speeding up the task of consolidation and reducing its cost.

Agricultural Labour

For a proper understanding and correct solution of agricultural labour problems it is necessary to possess basic data about the composition of labour force, the various social and economic factors which influence the supply of family and hired labour; the effect of technological progress, mechanization and intensification of agriculture on the demand for labour; the living expenses of labour families, the needs of a better standard of living under changing economic and social values, etc. For enforcing the measure of minimum agricultural wages and fixing the rate, it is necessary to determine the capacity of agriculture to pay such wages. The enforcement of minimum wages also raises the issue of efficiency of labour and the need for a minimum output of work. The drawing up of efficiency scales for various agricultural operations will greatly help in settling disputes among the farmers and the labourers. The study of family budgets of labourers is necessary for the sake of suggesting economies and better use of their limited earnings.

Agricultural Credit

Lessons of the great depression of thirties and of agricultural prosperity during the post-war years have demonstrated clearly the important role of credit in agricultural progress. For formulating and executing any sound plan of agricultural credit, it is necessary to know what are the credit requirements of farmers for various purposes, what is the rate of savings and capital formation within agriculture itself, what funds have to be secured from outside the industry, what sort of credit contributes most in raising the earnings of the farmers, what adjustments are necessary in the period of repayment in relation to different classes of farmers, what is the maximum safe limit of credit for the various categories of farmers, both in terms of their tangible assets and repaying capacity. Only the right sort of agricultural economic research will provide reliable and objective answers to these questions.

Agricultural Production and Prices

Some arrangements exist for compiling the statistics of production and prices in most of the States. One great drawback which still continues, however, is that the needed analysis correlation and interpretation of such data are yet lacking in many respects. Consequently, the compilation of such information is mostly progressing mechanically. Such valuable information is not being made full use of in forecasting the trend of production and prices of various agricultural commodities, in analyzing the factors influencing the trends and in issuing timely advice on necessary measures and adjustments before the situation becomes irretrievable. The case of sugar is an instance in point.

The need of timely forecasts of agricultural economic situation through an intelligent and careful study of the production and prices data not only with the help of Indian data but with that of the other countries as well cannot be overemphasized. Such forecasts are certainly of considerably greater practical use to farmers and the State than a mere postmortem of past events.

The farm cost studies occupy an important place in fixing prices of various agricultural commodities on a scientific basis. Such studies guide the farmers in making an efficiency check-up of the management of their holdings. They directly contribute to increase in production and economy in operating cost by making known the secrets of successful farming and management. The defects in land-use, rotations, and cultural practices and the reasons for high cost on an unsuccessful farm are quickly spotted by comparing its working with a well-run farm. The study of yields on holdings on a long term basis and their comparisons can provide important clues to the causes of low yield. Such information can be very useful in improving the yields. Yield data are also required for estimating the risk arising out of natural hazards in various localities and for fixing the insurance premia of various crops if and when introduced.

Crop competitions on a countrywide basis have become an important annual feature of the activities of the State departments of agriculture. A large number of farmers in widely scattered localities enter these competitions under the stimulus of prizes and trophies. If a faithful record of their cultivation practices and cost is maintained and properly analyzed, it can provide most practical clues to raising our existing low acre yields. The agricultural economist can easily determine the points up to which it is remunerative for farmers to intensify the cultivation of various crops. It is, indeed, a pity that such valuable experiments, willingly carried out by thousands of farmers are not being put to a greater use. With such dire need for increasing production, India can ill afford to lose such rich experience available just for the asking.

Public opinion is gaining momentum in favour of statutory provisions for prescribing reasonably good farm husbandry standards for the cultivation of each bit of land. It is no more a social obligation merely but has already acquired the character of a legal measure in many other countries, such as the UK and Germany. It is obvious that in prescribing reasonably good standards of cultivation, technical factors alone will not suffice, economic factors, *e.g.* cost and highest net return per unit of investment, have also to be taken into account.

Agricultural Extension and Rural Leadership

Agricultural extension is defined as the translation of technical research into the cultivator's fields. Technical research, unless it economises costs or raises net profit, is not going to be accepted by the farmer. This brings to the forefront the need of close co-ordination between agricultural economists and agricultural scientists in evolving improved practices. An intensive survey of the farmer's resources is also imperative to find out whether he is not adopting improvements due to psychological reasons or economic handicaps. If it is due to the latter, they have to be studied in detail by the social scientists before he can play the role of an interpreter between the cultivators, the scientists, and the executive personnel. This is why training in agricultural economics is considered an essential qualification of the extension man in other countries. The application of farm management principles in reorganizing the use of farm resources through the technique of farm planning has helped greatly farm productivity and efficiency in the USA, the UK, Sweden and Japan. Farm management extension constitutes a basic feature of the extension programme in many countries.

Rural sociologists can play an effective role in analyzing the situations responsible for lack of rural leadership and in suggesting ways and means for carefully fostering it. The opinion poll, if well drawn up and conducted carefully, can provide first hand knowledge of farmers' reactions to various recommendations of agricultural improvements and of the reasons for their not accepting or implementing them.

Agricultural Taxation

For some time to come, there will be an ever-increasing demand for finance for the development of Indian agriculture. This will naturally lead to increase in agricultural taxation and imposition of various kinds of development levies. In this regard, accurate appraisal of increase in gross and net farming returns due to various developmental activities is essential for evolving a sound policy of development levies. The increased taxation should bear a close relationship to the agriculturists' capacity to pay. The impact of taxation on agricultural production should be under careful and constant watch, its neglect may result in such an increase in taxation that it may be a serious deterrent to agricultural progress.

A mere appraisal of the impact of agricultural taxation will not be enough. One has to take into account all other governmental economic regulations which have influence over the agricultural sector of our economy. It is said that the taxation system in underdeveloped countries is generally regressive because of the weight and incidence of consumption taxes which bear proportionately more heavily on families with small incomes. In India, the overwhelming majority of the farming population comprises low income groups. It should, therefore, be considered imperative to study the incidence of consumption taxes. In this regard, extensive and thorough household studies of the consumption patterns of agriculturists, especially of low income groups, are also needed.

Full information on yield per acre, intensity of cultivation, operating expenses, average gross and net returns and incidents of natural hazards in various regions is absolutely necessary for evolving a scientific basis for rent fixing.

In the First Plan the Planning Commission recommended that the maximum rent should ordinarily not exceed one-fourth or one-fifth of the produce. It also implies that the basis of the fixation of rent should be gross produce; it certainly betrays ignorance of modern advancement in the theory of rent fixation. The charging of rent on the basis of gross produce is as regressive and harmful to the cause of intensive farming as the *batai* system (rents in kind).

The following excerpts point out very pertinently the harm of an ill-thought-out measure of rural taxation:

Underdeveloped countries have been slow in introducing a system based on progressive taxation of agricultural land and agricultural income, preferring the simpler method of taxation through consumption taxes and price fixing, or control of imports and exports to the more expensive apparatus of varying assessments tax collection. This so-called simple system in effect impairs the living standard of the agricultural population by increasing the prices farmers pay for textiles and other essential commodities while giving them, in many countries, only one-third to one-half of the world market value for their produce. By reducing the incentive to farmers, these forms of taxation often work against the expansion of agricultural production.

In many underdeveloped countries the large agricultural incomes receive preferential tax treatment, since neither the increased postwar values of agricultural land are taken into account in the assessment for land taxes, nor the income derived from agriculture is taxed progressively. This fact has favoured the landed class and hindered the establishment of a rural middle class.¹

Evaluation of Development Activities

If agricultural economic research is important for the formulation of sound agricultural policies and taxation measures, it is of no less importance in the evaluation of progress of various developmental measures. The Accountant Generals at the Centre and in the States, aided with huge staff, exercise effective check on governmental expenditure, mainly from the point of view of whether the expenditure has been actually incurred. But unfortunately, so far the country is lacking in an equally well-developed organization of agricultural economists entrusted with the task of efficiency-audit of results and achievements of the agricultural programme. The need of an organization for economic appraisal of development activities brooks no delay in view of an ever-increasing assumption of the welfare role by our government and huge outlay by it on economic planning.

¹Ench H. Jacoby, "Taxation of Agricultural Population in Underdeveloped Countries", *FAO Bulletin of Agricultural Economics and Statistics*, Vol. F, No. 2, June 1952.

Suggestions

The government has from time to time felt the need of information and reliable data on the various aspects of the country's agricultural economy. Of late, the tribe of economists in the government has rapidly multiplied. Special committees have been appointed and specific investigations have been undertaken but the policy followed so far has been one of ad hoc investigations. It is also true that due emphasis on agricultural economic research which the subject deserves in view of the importance of agricultural sector in Indian economy has been lacking. Somehow an obvious fact that problems of agricultural economics are not static but dynamic has been ignored. This has considerably limited the contribution of the investigations undertaken on a temporary basis as their findings could not remain valid for long in view of the dynamic nature of economic conditions. One more drawback of such studies has been that they have suffered most in quality and reliability as the temporary nature of employment could neither command the staff with requisite qualifications and experience for the efficient discharge of their duties nor could have the proper incentive for work with the spectre of an uncertain future and unemployment ever present before their mind. The need for permanent departments of research in agricultural economics as in other technical branches of agricultural sciences cannot be overemphasized.

In countries where planning or economic measures and regulations have succeeded or are working satisfactorily, intensive researches in agricultural economics have played a major role in the formulation of sound agricultural policies and in their modifications and adjustments in the light of experience gained through a continuous check and efficiency audit of the progress achieved. In this respect, the most befitting examples are the USA and the USSR. M. Ezekeil, an eminent economist observes: "Had it not been for ten years of pioneering work in economic analysis in agriculture started by Dr. Taylor in the Bureau of Agricultural Economics, our Agricultural Adjustment Act might never have functioned effectively."

Another serious bottleneck in the implementation of research programmes in agricultural economics is the lack of suitably trained personnel with requisite experience. In the absence of such personnel, jobs requiring specialized knowledge of agricultural economics have to be managed very often by persons with training and experience in different branches of social sciences sometimes not even that, the training being only in mathematics or statistics. This difficulty has been experienced in the early transitional stages even by countries now well-advanced in the field of agricultural economic research.

In India, where under the stimulus of our newly won freedom, we are eager to reconstruct our national life on the basis of freedom from want, hunger, and disease, agricultural planning has to play a vital role. We cannot afford to forget the elementary lessons learnt in this direction. Their experience underlines the fact that agricultural planning must be preceded by an intensive effort in agricultural economic research which has, however, to continue even during and after planning. For this the country needs a large number of trained agricultural economists who in addition to their education in social sciences have first hand knowledge and experience of agriculture.

To conclude, "As more is known and understood about the functioning of the agricultural economy and the interrelationships between agriculture and other parts of the economy, policy measures become more complicated both in their legislation formulation and in their administration. A heavy responsibility rests on the social sciences to provide the trained personnel to fill the staff position with highly competent individuals. Of equal importance is the need for research and education on the dynamic aspects of policy problems and for additional objective analyses of the effect of specific programme lines or action."

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