

CAPITAL FORMATION IN AGRICULTURE SECTOR OF MANIPUR



N. BHUPENDRO SINGH

Capital Formation in Agriculture Sector of Manipur (1972-1997) deals with the increasing significance of capital formation in technology-based modern agriculture. The book is a treasure trove of information on the concept of agricultural capital formation and estimation of public and private agricultural capital formation trends. It also addresses various related issues such as determinants of private capital formation, relation between public and private capital formation and its impact on agricultural production with the help of various econometric techniques, using both secondary and primary data based on field survey in the state of Manipur. Besides, the status of agriculture in the state with special reference to agrarian structure has also been discussed exhaustively. Students, researchers, academicians, policy makers and other readers interested in the agriculture sector of India and its north-east in particular will find the book a must-read.

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(1972-1997)**

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1

Introduction

When man established himself a settled life with agriculture as the main occupation, capital has been used as one of the most important factor of production. Since then the intensity and composition of capital have altered immensely with the advancement of human civilization leading to a continuous changed in the process and techniques employed in the production of goods and services. In every production process more of labour factor is being substituted by capital factor. The productivity of land and labour is being increasingly determined by the quality and quantity of capital used in every production process. In this modern era of civilization the productive capacity or productive base of every economic activity has become more capital intensive rather than its labour size or land resources. The extent of efficacy of all the productive effort ultimately depends upon the size of capital being employed. Thus, it has been widely accepted that the task of developing an economy cannot be accomplished without the judicious combination of factors and efficient utilization of available capital.

Although, theoretically, it may be possible to produce a commodity only with the combination of land and labour

but, practically, it is not possible to produce anything without some amount of capital. This is because, inspite of the significant role played in the production process, capital by itself does not stimulate any independent impulse. It only transmits an impulse given by the original productive powers of land and labour.¹ Therefore, one may conclude that, capital is necessary factor but not the sufficient one in the process of production.

Capital is different from all the other natural resources that are the gifts of nature. It is an intermediate product of land and labour. Its own origins, its existence, its subsequent action, are nothing but stages in the continuous working of the true elements—land and labour.² Capital is only a tool of production. It abridges the original factors in the production process. That is, capital acts as the medium through which the two original productive powers i.e. land and labour exert their instrumentality.³ In short, we can say that all forms of capital which acts as a catalyzing agent in the development of an economy are manmade with the application of available natural resources and, therefore, its stock can be increased by human effort only.

There is no precise definition of capital. It has been defined in a number of ways depending upon the nature and scope of the concept in the process of production. "A unique definition of capital for understanding the nature of economic process is not possible since the nature of the economic process itself is not unique."⁴ To those economists who are concerned mainly with the problem of static equilibrium, the question of defining capital does not present a big problem.⁵ In such economy capital can be accurately measured and we can know precisely what is meant by 'keeping capital intact'.⁶ In a stationary economy the form, function and coverage of capital in the process of production

are quite limited. But “so long as the economy is undergoing any sort of change, and capital goods are altering their form, we cannot know exactly to what extent capital is increasing or decreasing.”⁷ In today’s dynamic economy the problem of defining capital has become infinitely more difficult because of its varied forms, functions and wider range of coverage. They keep on changing as a consequence of technological advancement. Perhaps in the prevailing pace of change of economic system, we should abort the quest for precise definition of capital and its true measure. Instead it would be more appropriate to concentrate on defining a more reliable pointer applicable to particular production process.

Capital has been defined in a number of ways. Bohm-Bawerk (1948) defined capital as a “produced means of further production.”⁸ A United Nations Study (1955) defined as “those goods resulting from economic activity, which are used for future production of other goods.”⁹ Colin Clark (1957) defined as “those reproducible wealth which are used for the purposes of production.”¹⁰ Thus, by capital we meant all those assets or reproducible wealth or goods, which are used directly or indirectly for augmenting production over a period of time in the future.

Capital as a produced means of further production takes different forms based on the nature of economic function it performs. They take the form of tangible assets or physical or material capital such as plants, raw materials, machinery and equipments, all kinds of construction, etc. and intangible or human capital which are embodied in oneself such as education, technical training and managerial skill and knowledge. In short, capital includes both physical as well as human capitals.

In the earlier part of our civilization, of the two components, physical capital used to play a dominant role in the functioning of economic activities. But in the recent years human capital has been considered as one of the most important components of capital. "With time stretched out to the farthest ends, the investment in human being has become an important form of capital, and the investment in human being may not necessarily be restricted to the improvement of metal equipment and physical dexterity, it may as well include the crude physical capacity of the human being too, since it too is yoked to production."¹¹ All the new forms of material capital innovated or designed to suit the changing environment in the production system are coming only from the cranium of those educated skill labourers. Furthermore, a trained labour is a better ally to physical capital and performed better than untrained labour thereby resulting into increase in production. The education and training part acquired by labour force has also been considered as capital.¹² Human capital not only determines the quality and composition of physical capital but also raises the efficiency and quality of labourers and hence productivity. Though the importance of human capital is gaining momentum no appropriate yardstick has so far been formulated to measure it.

It is well-known fact that capital—physical as well as human capital - plays an important role in the process of production in particular and development of an economy in general. Now the pertinent question is how do we enlarge the stocks of capital? The size of the capital could be enlarged if and when there is a net addition to the existing stock of capital. It could be achieved only when the rate of capital formation is accelerated consistently which in turn depend upon the extent of investment and saving in the economy.

1.1 Capital Formation

Capital formation in any productive system means net addition made to the existing stock of capital goods in a given period of time. It not only includes all kinds of material capital like machine, tools, plants, instruments, constructions, etc. but also non-material goods like knowledge, technical skill and health of the people. The net addition in the existing stock of capital could be arrived when there is significant rate of saving and investment concurrently. "The meaning of 'capital formation' is that society does not apply the whole of its current productive activity to meet the needs and desires of immediate consumption but directs a part of it to the making of capital goods; tools and instruments, machines and transport facilities, plant and equipment—all the various forms of real capital that can significantly increase the efficacy of productive effort. The term is sometimes used to cover human as well as material capital; it can be made to include investment in skill, education and health a very important form of investment."¹³

The investment in physical asset, which leads to capital formation, is well known and need not be reiterated further. Investment in human beings means knowledge and skill formation. The level of education that a person acquired would reveal the extent of knowledge explored and accumulated by him. In all the sectors of the economy, an educated trained labour is more effective in the process of production than an uneducated and untrained labourer. The skill to handle more sophisticated machinery and equipments that one acquires from training and education is a part of capital formation. It implies that, apart from physical capital formation, human capital formation has also become one of the most vital components of the capital formation.

Capital formation in an economy is mainly the result of abstinence of a part of present consumption to be utilized in future production. The net addition made to the existing stock of capital is possible only when a part of the current income is transferred for the formation of capital which can enlarge future production. The essence of capital formation is the diversion of a part of current income by sacrificing present consumption and investment in a more productive way in the future.¹⁴ It may be noted that the types of investments qualified to be included in the capital formation are only those investments incurred in the formation of real physical capital or human capital. While investments incurred on acquisition of financial assets are to be excluded, as they do not enlarge productive capacity directly.¹⁵ In other words, capital formation is the outcome of those investments incurred on the addition or creation of physical assets or human capital which are directly involved in the process of production.

There are various steps involved in the process of capital formation. Meier (1970) broadly classifies the steps involved in the process of capital formation into the following three steps;

- (i) an increase in the volume of real saving so that resources can be released for investment purposes;
- (ii) the channelising of savings through a finance and credit mechanism, so that investible funds can be collected from a wide range of different sources and claimed by investors;
- (iii) the act of investment itself, by which resources are used for increasing the capital stock.¹⁶

The saving a part of current income and channelising it to the creation of physical assets or goods, which are

more productive, is the essence of capital formation. This implies that, "capital formation requires an act of investment as well as a capacity to save."¹⁷ In order to accelerate the rate of capital formation the rate of investment should be increased which is directly related to the amount of saving accumulated in the economy. These show that saving is directly proportional to capital formations only if and when savings are converted into real investment. Even though there were a high rate of saving, if they are not utilized in the creation of physical assets to augment future production the rate of capital formation would continue to be low.

One can easily grasp this scenario in underdeveloped countries. These countries are manifested with vicious circle of low income, low saving, low investment and low rate of capital formation, which ultimately leads to low income. Over and above the meagre amount of saving associated has not been utilized properly in the creation of capital goods, which would be used in further production of goods and services. These countries lack strong political will on the part of government to induce the general public for more saving and lacks proper infrastructure needed for channelising the saving so generated to the desired areas. As a result the rate of capital formation in these countries continues to be low and hence inordinate delay in development process.

Furthermore, the rate of human capital formation in these countries is also very low over and above the low rate of material capital formation. In other words, the rate of economic growth in the underdeveloped countries is quite low no matter how much physical or material capital is applied in the process of production. This is mainly because of low rate of human capital formation. As Meier (1970) has said "in many newly developing countries the

absorptive capacity for physical capital has proved to be low because the extension of human capabilities has failed to keep pace with the accumulation of physical capital".¹⁸ Both material and human capital formation should grow in a pace ensuring optimum mixed between them. Investment in human capital leads to changes in the composition of physical capital, qualitatively and quantitatively, in the economy which ultimately influence the pace of development of that country. In this modern era of civilization investment in human capital formation is one of the key factors in determining the pace of development of a country.

1.2 Capital Formation in Agriculture

Since the days of Adam Smith, almost all economists regarded capital formation as one of the most important determinant of economic growth and development. Nurkse opined that, the vicious circle of poverty in underdeveloped countries could be broken through capital formation. The famous Harrod-Domar equation, which was incorporated into the planning models of many underdeveloped countries including India, stated that the growth rate was dependent upon the rate of investment and the capital-output ratio. For a given capital-output ratio, the higher the rate of investment higher is the rate of growth. Similarly, Arthur Lewis asserted the importance of capital formation in economic development in his 'Economic Development with Unlimited Supplies of Labor'. According to him "the central problem in the theory of economic development is to understand the process by which a community which was previously saving and investing 4 or 5 percent of its national income or less, converts itself into an economy where voluntary saving is running at about 12 or 15 percent of national income or more. This is the central problem because

the central fact of economic development is rapid capital accumulation (including knowledge and skills with capital).¹⁹

The growth and development of an enterprise in particular and economy in general is determined ostensibly by the level of technology and efficiency of market mechanism. While the level of technology determines the quantum of output that can be produced from a given input resources, the size of the market is determined by the volume of production and productivity.²⁰ This implies that "capacity to buy means capacity to produce."²¹ However, an improvement in the level of technology and efficiency of market mechanism is grossly inclined on both quality as well as quantity of capital employed in the economy. It means growth and productivity of an enterprise is mainly dependent upon the degree to which capital is employed in production processes.²² When the stock of capital increases, naturally the technical form of it also changes as a consequence of technological progress. Similarly, it would also help to remove market imperfections by creating economic and social overhead capital thereby induces the expansion of market.

The government of India realized the importance of capital formation since the inception of economic planning. By adopting the Harrod-Domar growth model in the First Five Year Plan, the government of India stated "the key to higher productivity and expanding the level of income and employment lies really in stepping up the stock of capital at its disposal, i.e. on the amount of land per capita and of production equipments, tools, and implements, factories locomotives, engines, irrigation facilities, power installations and communication."²³ It was reiterated in the Second Five Year Plan as well. In short, a significant amount of

capital formation is required for achieving the much-desired goal of growth and development of every economic system. Agriculture sector is not an exception. Agriculture being the primary sector of every underdeveloped economies, it is highly imperative to exert significant thrust to increase the stock of capital in this sector as well.

Agriculture is the oldest occupation of mankind. It occupies a very important place in the economy of the underdeveloped countries or states. It has been the single largest contributor both in terms of the share of gross domestic product and employment in every developing country's economy including India. This sector not only feeds the entire population but also provides the necessary raw materials required in the development of other secondary sector as well. Gandhi (1997) has identified seven major contributions of agriculture to economic development of these countries. They are, i. Product contribution; ii. Income contribution; iii. Employment contribution; iv. Factor contribution; v. Capital contribution; vi. Trade contribution; vii. Demand contribution.²⁴ In an underdeveloped economy "if development is to take place and become self-sustaining it will have to start in the rural areas in general and the agricultural sector in particular."²⁵ In these countries the prosperity of the people is very much interlinked with the development of agriculture sector.²⁶ "The core problems of widespread poverty, growing inequality, rapid population growth and rising unemployment have their origins in the stagnation and often retrogression of economic life in rural areas."²⁷ It, therefore, should be given the highest esteem and importance in the growth and development of this sector in every plan formulation. Any sort of negligence would have an adverse impact on production and productivity of this sector in particular and economy in general.

With the growth of the population in geometric progression, the demand for food and other agricultural products has increased considerably. On the other hand, the land-man ratio has been increasingly adverse, as the scope for further extension of arable land seems to have reached the point of saturation. Any attempt to expand the net sown area could be at the expense of ecological harmony, which is against the concept of sustainable development. Indeed ever-burgeoning population exerts tremendous pressure on the size of cultivable land while the fertility of land varies little overtime. Furthermore, the institutional setup²⁸ that has been inherited from our ancestors also acted as an equally important stumbling block in the growth of agricultural output. In a country/state where agricultural sector is dominated by marginal and smallholdings the goal of rising agricultural production is unlikely to be realized unless suitable technologies compatible with the prevailing institutional framework have been employed. This is because “an agrarian structure with unequal land distribution is understood to lead to under-utilisation of land and, therefore, low productivity.”²⁹ The employment of suitable technology will enable to achieve optimum utilization of other factor inputs such as land, labour, etc.

In most of the underdeveloped countries this sector has been found to be associated with, in the language of Schultz, traditional agriculture. According to him traditional agriculture means “the state of art and the state of preference and motives for holding and acquiring agricultural factors as sources of income streams have remained approximately constant for a long period—long enough for suppliers and demanders of agricultural factors to have arrived years ago at a particular long run equilibrium—belongs to this class. Its critical economic characteristic is the high price

of the sources of permanent income streams from agricultural production.”³⁰ The major attributes of traditional agriculture are the use of labour-intensive technique of production with unchanged primitive technology, low level of skills formation and technical know-how of the labour force. In this type of agriculture, production is mostly for self-consumption and therefore, the extent of marketisation is very limited. A fairly large proportion of the labour and materials used in production and investment is owned by the families and consequently, the degree of monetisation is also very low.³¹ In traditional agriculture land-labour-bullock activity is the way of life. The net capital formations are very low and are mostly of traditional type as the rate of investment is negligible. The low rate of investment is mainly due to low saving and backwardness of technology in use. In such cases it is very difficult to meet the growing demand for agricultural products. To achieve the goal of raising agricultural production it has become highly pertinent to transform this tradition-ridden sector into a dynamic modern sector with the application of modern science and technology, new skill and knowledge, and development of more efficient market structure. This, however, could be achieved only when there is concurrently high rate of saving and investment leading to higher rate of capital formation. Any decline in the rate of investment for capital formation would hamper the progress of transformation of agriculture from a predominantly subsistence sector to a surplus generating business sector.³²

In modern agriculture the principle source of high productivity is capital formation. The components in land and in man that are fixed by nature are generally of secondary importance.³³ The transformation of traditional agriculture into a modern sector required to develop and supply a more profitable set of factors. Development

and supply of such factors and learning how to use them efficiently constitute investment in both human and material capital.³⁴ This increasingly calls for larger and more efficient utilization of capital and its formation in the production process. Increase in capital formation would also lead to increase in the efficiency of labour. It would enable the farmers to take full advantage of the available technology thereby reducing the gulf of available technology and applied technology. This reveals that inputs and technologies used in modern agriculture are highly capital intensive as compared to that of traditional agriculture.

Shifting priority away from agriculture to manufacturing sector before it is fully developed would have an adverse impact on the income and welfare of the people associated with in particular and overall development of the economy in general. A major reason for the relatively poor performance of agriculture in underdeveloped countries has been the neglect of this sector in the development priorities of the respective governments. The neglect of this sector and accompanying bias in favour of investment in the urban industrial economy in turn can be traced largely to the misplaced emphasis on rapid industrialization via import substitution and exchange rate overvaluation that permeated development thinking and strategy during the post-war decade.³⁵ A questionable notion indoctrinated in our Second Five Year Plan. Shifting of investment toward non-agriculture sector may result in a faster growth in total gross domestic product in the long run. Yet, the growth across sectors is likely to be highly uneven, with non-agricultural sector showing a higher growth rate than agriculture.

Slowing down of agricultural growth would lead to growing income inequality between rural areas and urban

areas. A sound development of this sector—foundation of every developing economy—is the crux of sustainable development of an economy. This sector can be a powerful engine for growth if suitable forms of investment for large-scale production are applied. Incentives for guiding and rewarding the farmers are critical. Once there are investment opportunities and efficient incentives, farmers will turn sand into gold.³⁶ All this implies that capital formation is the pre-requisite for the growth and development of this sector. It sets the pace and pattern of agricultural production in particular and economy in general.

Until recently capital formation in agriculture has been defined in a very crude form. Capital formation in agriculture comprises net addition made to the existing stock of assets like livestock, land reclamation, bunding and other land improvements, irrigation, constructions, orchards and plantation, tools and equipment, etc. Schultz (1964) calls these forms of capital traditional capital. These traditional capital are formed mainly with the direct application of unpaid family labour which can be created without much financial saving.³⁷ In those productive systems where traditional forms of capital predominate the goal of raising production is unlikely to be realized no matter how fertile the land is.

Schultz defined capital formation in agriculture on a different perspective. According to him, the goal of raising agricultural production would not be feasible only with the traditional forms of capital. Production in abundance of farm products requires that the farmer has access to and has the skill and knowledge to use what science knows about soils, plants, animals and machines.³⁸ In modern agriculture production activity has been evolved around technology-seed-fertiliser-water combination where human

agent plays a significant role. The improvement in the quality of factor inputs including the human agent lies on the level of skill and knowledge acquired in oneself. The production activities in modern agriculture have inclined towards human resource rather than natural resource. Similar to other sector of the economy, human capital formation has also been reckoned in the definition of capital formation in agriculture. It plays an important role in injecting the technological knowledge so as to transform traditional capital into modern capital that is more ally to the vastly diversified and heterogeneous present day economic system.

Investment in agriculture is a very complex process considering the degree of risk and uncertainty associated with this sector. The rate of return on investment in this sector is highly volatile. As a result investors are always reluctant to invest to this sector unless the person has a high degree of risk taking capacity. Moreover, like other sectors of the economy capital formation in agriculture also depends upon the profitability measured by the expected rate of return on investment. The condition is further accentuated where the traditional forms of capital predominate the sector because they are known to have low rate of return. Therefore, in a traditional agriculture the rate of investment and hence capital formation is very low. To transform traditional capital into modern capital, which generally yields higher rate of return, it is highly imperative to increase the rate of capital formation. The supply of capital is not the primary problem; it is rather a problem of determining the forms this investment must take, the forms that will make it profitable to invest in agriculture.³⁹ This would require to mobilise the resources and invest on those activities that will be profitable in the future. In traditional agriculture any strategy, which

commands farmers to increase production, is doomed to failure even though they have access to knowledge. Instead an approach that provides higher incentives and rewards to farmers needs to be adopted.⁴⁰

1.3 Source of Finance for Agricultural Capital Formation

The main sources of finance for agricultural capital formation⁴¹ differ from country to country and from state to state. In a structurally backward economy like India agricultural capital formation is the sum total of capital formation accrued by public and private sector. By public sector we meant state government, non-departmental commercial undertakings, and local bodies. While private sector is consists of household and other private corporate sector. Those investments incurred by state government, non-departmental commercial undertakings, and local bodies for the formations of real asset are generally term as public capital formation. The public capital formation is mostly confined to the development and maintenance of infrastructures thereby creating a congenial environment for the farmers to invest on farm sector. While those investment made by the household and private corporate sector are termed as private capital formation. They are mostly confined to the creation of physical assets of the individual farms.

1.3.1. Public Capital Formation

In a structurally backward economy, public sector needs to play a crucial role in the development of agriculture sector. Public sector not only provide direct impetus to the growth and development of this sector, but also provides number of other support measure such as subsidization of key inputs, price support system of farm outputs, provision of institutional credits to the farmers etc. which would

enlarge the productive base of the farm sector. The development of proper infrastructure coupled with facilities to access other support measures will induce the farmers to invest on farm sector.

Public capital formation in agriculture⁴² is mainly confined to those areas where private individuals are reluctant to invest such as irrigation (major, medium and minor), crop husbandry, soil and water conservation, land reclamation, infrastructure, technology adoption and research.⁴³ These areas require a lumpy investment with long gestation period before the impulse of direct productive effects on investment is felt. At the same time return to investment in these areas are very low and takes long time in recovering the amount invested.

The public capital formation in agriculture is more of a rule rather than an exception the world over. The rationale of public investment is 'market failure' to provide public goods and is more common in the case of agricultural sector. The major attributes of such goods are indivisibility, externality, ignorance, jointness in supply and utilization.⁴⁴ As a result exclusive principle cannot be applied to benefits from such goods in the particular region where the goods are provided. Contrarily, exclusive principle can be applied in the case of private capital formation. In other words, public capital formation is subject to spill-over effect in the particular locality.

Public capital formation plays a very significant role in modernization of agricultural sector of an economy. An increase in public capital formation will enable to change the composition of capital suited to particular types of environment. It also enlarges the productive base of the agricultural sector. The success of green revolution in India was mainly due to massive public investment in basic

infrastructure, electricity, irrigation, canals, roads and communications, organization of market structure, warehouses, research, extension services and number of other support measures.⁴⁵ Besides enhancing the production process directly public capital formation in agriculture is known to stimulate farmers' own investments in farm business and thereby resulting into further enlargement of the capital stock of this sector.⁴⁶ The extension of irrigation facilities and development of infrastructure leads to change in the cropping pattern and overall production technique as it creates a congenial condition for the application of new capital inputs such as chemical fertilizer, improved and high yielding varieties of seeds, pesticides etc.⁴⁷ In short, public capital formation provides impetus to the growth and development of agricultural sector by creating, improving and maintaining suitable infrastructure which will also creates conducive atmosphere for the farmers to invest on farm sector.

Agriculture being a state subject public capital formation has generally been treated as exogenous variable by micro-modellers. The overall public capital formation in agriculture is dependent upon the policy measures and availability of fund in the government exchequer. The implementation of suitable policy measures by the government will enable to acquire adequate public capital formation needed to remove those obstacles which impede the progress of the process of transformation of agriculture from a predominantly subsistence sector to a surplus generating business sector. It, however, requires a stable government with strong political will. The role of the government must evolve around those activities, which performed with the greatest effectiveness in terms of meeting the needs of the agricultural sector.⁴⁸ Instead of real investment if the government resort to the policy of appeasing the different interest groups and

divert the available resources to current expenditures in the form of subsidies, exemptions, maintenance of existing projects and inordinate delays in completing the projects in hand, the growth and development of this sector will be delayed further. Over and above public investments should not meant to enrich the pockets of those concern politicians, bureaucrats and officials associated with.⁴⁹

Amongst the various components of public capital formation in agriculture, investment in irrigation work accounted most. Therefore, any short run fluctuations in public capital formation were mainly due to the fluctuation in public investment in irrigation work and exert direct impact on the growth of output. However, in recent years lack of public investment in human capital formation seems to act as a limiting factor in the growth of agriculture. This is because the role of human capital formation in transforming the agricultural sector seems to be growing. In this modern era of complex pattern of production activities that characterize Japanese agriculture have been made possible by two types of public investment; investment in research and development and investment in general education.⁵⁰ Investment in these areas would lead to innovation and development of new capital and also increase the efficiency of agricultural labourers. It is with the help of these parts of capital formation that will enable to break those limiting factors acting upon the goal of modernising agriculture sector by altering the composition of material capital align to particular types of environment.

Public capital formation played a very crucial role in the development of agricultural sector. Any sort of fluctuation in public capital formation is bound to be a source of anxiety to the general public. Insufficient growth and receding total factor productivity would be due to inadequate

public investment in agricultural research and extension, irrigation and other rural infrastructure, and diffused and inappropriate policy measures.⁵¹ Adequate public capital formation along with suitable policy measures on the part of government sets the pace and pattern of agricultural growth in particular and economy in general. With the growing integration of world economy and declining state intervention market failure has come down considerably. Therefore, the rationale of provision of public capital formation in agricultural sector needs to be elucidated altogether.

1.3.2. Private Capital Formation

Private capital formation constitutes those reproducible assets and improvement in quality of existing assets, which are derived from investment made by household and corporate sector including both organized and unorganized segments. Private capital formation is mainly confined to the following areas; (i) Reclamation of land and land improvement, (ii) Purchase of new farm tools, and equipments including other means of transport, (iii) Construction and extension of irrigation means, (iv) New plantations and addition to existing orchards and plantations, (v) Construction of new farm structure such as farm houses, grain golas, cattle sheds, etc. (vi) Net increase in livestock, (vii) Investment in farm inventories and other farm business.⁵² The level of private capital formation would, however, be highly dependent upon the extent of infrastructural development which is the function of public capital formation in that region. Well-developed infrastructure will induce the farmer to invest on farm sector.

The main source of private capital formation in agriculture is household saving and borrowing. In the

traditional agriculture the level of household saving and borrowing is very low due to the lack of adequate infrastructure to attract them. At the same time meagre saving available could not be utilized to an optimum level due to the lack of profitability, which hinges upon the expected rate of return. As a result the rate of private investment is very low and this sector continues to remain as a subsistent sector. Profitability of investment is the key determinant of investment decision-making and is measured by the expected rate of return. It is generally perceived that if this return exceeds the rate of interest on funds borrowed for investment in question, the investment is a worthwhile proposition. However, unlike other sectors of the economy, due to the high degree of risk and uncertainty associated with this sector have rendered investment decision-making a truly complex process.⁵³ The problem is further accentuated in underdeveloped countries where traditional agriculture is prevalent. In these countries agricultural production is only at subsistence level. When farmers are assured of their expected return with certainty and investor has high degree of risk taking capacity private capital formation is bound to increase and vice versa.

Agriculture sector in every underdeveloped country is generally starved of investment resource because of low rate of household saving. It is the major source of finance in the case of private sector for the purpose of capital formation. In these countries private durable assets, which are produced in the industrial sector, using highly capital-intensive technique is very small. Usually in these countries private capital formation is mostly derived from unused family labour without much saving. In short, the incentive and ability to invest in underdeveloped countries are weak because the domestic market is small and domestic savings are meagre.⁵⁴ Nevertheless, private capital formation usually

contributes a larger chunk of the total capital formation in agriculture sector of these countries. In India, it contributes nearly two-third of the total capital formation in agricultural sector. Private capital formation in agriculture has generally been treated as behavioral or endogenous variable as they are determined by a number of factors which differ over time and space. We shall discuss in detail this issue in Chapter V along with the issue on the relationship between public and private capital formation.

Given the importance of agriculture in Indian economy, the repercussion of a fall in agricultural growth will be felt in all sectors of the economy and more particularly the income and welfare of the poor who depend on agriculture.⁵⁵ However, the development of agriculture across the country is highly uneven. Baring few selected regions of the country green revolution seems to have bypassed most of the regions more particularly the states of the north eastern regions. Since India is a pluralistic country with varying landscape different region has got different cultural identity, mode of cultivation and institutional setup, therefore, a common policy programme may not be sufficient in achieving desire result across the region. In order to bring a balance regional growth, it is highly pertinent to study and analyse agriculture sector from different angle including capital formation for the country as whole and also for different regional settings. Such analysis would enable us to identify the major institutional and motivational obstacles, which stood on the way to modernization of this sector in different regional setting. It would also help the government to formulate appropriate policy measures instrumental for mobilizing the resources and canalizing them into more productive and socially desirable channels.

There are number of studies on agricultural capital

formation at the national level, as listed in bibliography, but hardly a few are available at the regional level. Though a number of studies and analysis on different aspects of agriculture sector of Manipur have been conducted so far; Islamuddin, Mohd. (1984); Singh, W. Kumar (1987); Singh, N. Ram (1987); Singh, N. Mohendro (1989); Singh, L. Bokul (1989); Singh, E. Bijoykumar (1992); Singh, Th. Biren (1993); the issue of capital formation in agriculture for the state of Manipur has not been analysed till today. Neither the Department of Economics and Statistics, Government of Manipur have initiated to quantify the capital formation in agriculture. In this era of modernization and declining trend of state intervention in the functioning of market, it has become all the more important to estimate and analyse various issues related with capital formation in agriculture sector both at the national level as well as for different regional setting. In the light of the above discussion on the relative importance of agricultural capital formation in achieving sustainable growth and development of this sector the present study endeavour to fill the void for the state of Manipur.

1.4 Objective of the Study

Estimates of capital formation, savings and their inter-sectoral variations go a long way towards providing for a better understanding of the economy and helping the government to formulate appropriate policy instruments for canalizing available savings into productive and socially desirable channels.⁵⁶ Dwelling upon this aspect present study is an attempt to quantify and analyse various issues related to capital formation in agricultural sector of Manipur. This study shall, however, be limited to tangible/material/physical capital formation only. This is because while human capital formation is gaining wider acceptance, not much is

known about the concept and their measurement except in education.⁵⁷ Further, we shall also skip the technological or engineering aspect of capital formation. The main objectives of present study are:

- I. To construct a time series on capital formation in agriculture sector of Manipur.
- II. To find out the determinants of capital formation in agriculture.
- III. To find out the possible relationship between public and private capital formation in agriculture.
- IV. To examine the effect of material capital formation in productivity and production of this sector.

1.5 Organisation of the Study

The present study has been organized into seven chapter including introduction. In chapter 2 a broad picture of agricultural sector in Manipur with special reference to agrarian structure and assets holding by the farmers has been discussed. Chapter 3 presents the sources of data, methodology followed and limitation in the construction of time series on capital formation in agriculture sector of Manipur. Chapter 4 presents the brief review on the various studies on the trend of public and private capital formation and causes and implications of these trends at the national level followed by the analysis on the same issue for the state of Manipur. A micro level analysis on the quantum of private capital formation has also been discussed in this chapter. The factors influencing the private capital formation both at the national and state level vis-à-vis complementarity hypothesis between public and private capital formation has been discussed in chapter 5. In chapter 6 an attempt has been made to examine the impact of capital formation in the production and growth of agriculture sector of

Manipur. It also reviews various studies on this issue at the nation level. Conclusion and policy implications of the study are presented in chapter 7.

NOTES

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