CONCEPTS OF ECONOMIC SURPLUS AND ESTIMATION THEREOF FOR INDIAN AGRICULTURE: 1980-81 TO 1995-96

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CERTIFICATE

Certified that this dissertation entitled "**Concepts of Economic Surplus and Estimation thereof for Indian Agriculture: 1980-81 to 1995-96**" submitted by Rakesh Ranjan in partial fulfillment of the degree of Master of Philosophy is entirely his own work and has not been considered for the award of any other degree at this or any other university.

We recommend that this dissertation be placed before the examiners for evaluation.

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Dedicated to My Baba,

Who is
the real inspiration
behind
my specific interest
in agriculture

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However, the usual disclaimer follows.

Rakesh Ranjan

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INTRODUCTION

Simon Kuznets wrote about different aspects of economic development while analyzing the experience of Modern Economic Growth of different countries. Apart from the aggregative aspects, such as increase in total income or per capita income over time, increase in more than formal mathematical sense, another crucial aspect which he pointed out was the structural aspect of economic development. The use of the term industrialization synonymously with economic development points towards this very aspect of structural change inherent in any economic development. Increasing share of industries, by which we mean manufacturing industries, in total income and output is one of the central features of economic development. A continuous rise in the dominance of manufacturing and a simultaneous decline in the share of agriculture have always been noted with emphasis. Hidden in this 'decline' of agriculture, however, is its prime role in economic development. The rise to dominance of industries owes a great debt to agriculture in the early phases of economic development. The Industrial Revolution in the 'first industrial state' was preceded by an 'agricultural revolution'. And the same is true for all the industrialized nations of the world. It remains true for all developing countries that a successful transformation of agriculture is essential to economic development. It is not only that this radical transformation of agriculture has to do with the 'wage-good constraint' on economic development, or a net financial contribution of agriculture to the process of industrialization; its importance also lies in the fact that a growing agricultural sector, supporting a vast mass of rural population, provides a huge domestic market for the produce of the manufacturing sector. Relative weakness in the international market for manufacturing goods in the early phases of economic development leaves very limited scope in the external market. A large size of domestic market provided by the agricultural sector eases this difficulty considerably.

What has been outlined above is only to mention the role of agriculture in economic development. In order to have successful industrialisation, therefore, transformation of agriculture becomes imperative. Development of the agricultural sector itself becomes an immediate task. An understanding of this task, or the problems and constraints in agrarian development becomes the object of study. There

are different sets of economic theories based on different understandings and methodologies. For some, agrarian development can be achieved and completed by a technological revolution. Attempts to raise yield through 'new technology seeds', chemical fertilizers, and other improved material inputs are central to this approach. Another set of theories emphasises the role of institutional structures existing in agrarian economies. For some of them, without a structural change, a change involving complete annihilation of certain kinds of institutions and radical transformation of certain others, there is no way one can talk of agrarian development. Existing structures pose the binding constraint on agricultural development. There are some economists who try to explain the whole problem in terms of 'efficiency'. Efficiency of existing institutions also, therefore, is examined and policy prescriptions are made. What we see, therefore, is a number of competing economic theories, taking recourse to suitable methods of analysis, trying to pose the problematic, and consequently, the path of agrarian development is suggested.

For a comprehensive understanding of the problem of economic development, a wholistic approach is required, which not only highlights the technological aspect, but also takes into account the structure of the rural economy and the possible influences of one on the other. It has been observed historically that technological progress has not been independent of the social structure within which the former occurs. At the same time, technological progress has resulted in replacement of certain socio-economic structures by newer ones conducive to and facilitating further technological progress. A historical comparative method turns out to be effective in carrying out such a comprehensive analysis. Any static methodological framework will not serve the purpose, since it cannot grasp the interrelationships and historical modifications therein.

The method of analysis used in the Classical Political Economy tradition proves to be superior to any other method. The so-called mainstream economics, the neo-classical theories, stand opposed to the former. The latter tries to explain the whole problem of agricultural development in terms of inefficiency in resource use. Inefficient allocations of resources, resulting from different kinds of 'distortions', constitute the source of the problem. By removing these distortions efficiency in resource allocation is restored. Given their emphasis on efficiency in resource

allocation, the central role is played by relative prices of all commodities, including land and labour. Once the constraints on market forces are removed and distortions done away with, the free play of market forces will result in the determination of relative prices, which, in turn, allocate resources to the 'most productive use'. This 'most productive use' is defined by the highest price paying use. Two brief comments can be made here: first, this approach is extremely narrow and considers only 'resource allocation'. The whole question of resource generation and distribution is ignored conveniently. Such a static framework is completely incapable of comprehending the dynamics of resource generation, distribution and allocation. Second, the framework is totally inapplicable to the analysis of the real world. The whole talk of relative prices and efficient allocation of resources vanishes in the air when one recognizes the fact that there are no developed markets and market forces, and consequently, the all important 'relative prices' are non-existent. When an economy is characterized by 'distortions', 'paradoxes' and 'imperfections', the static framework of neo-classical economics simply fails to pose the problem itself. Opposed to this static framework, Classical Political Economy tries to capture the dynamics of the agrarian economy by not only analyzing efficiency in resource allocation to different uses, but also analyzing the process of generation, distribution and accumulation simultaneously. The role of existing agrarian structures, not in terms of their 'efficiency', but in the entire process of generation and accumulation of surplus is taken into account. The applicability of this framework, therefore, does not require the existence of market forces and relative prices. The historical approach makes it applicable even to economies where capitalist transition has not yet been completed. In fact, this transition itself is analysed historically.

In the Marxian tradition, following the comparative historical method of the Classical Political Economy framework, this is problematised as the 'agrarian question'. The resolution of this question asks for complete transition of agriculture and completion of the task of financing industrialisation. Therefore, development of the agricultural sector is understood to be accompanied by a change in structure within, and also changing the structure outside, i.e., at an aggregative level of macroeconomic transformation.

In the present study an attempt is made to estimate the surplus generated in Indian Agriculture during 1980-81 to 1995-96. As already pointed out, for any meaningful discussion of agricultural development, the entire dynamics of generation, distribution and accumulation of surplus should be taken into account. This attempt can be said to be a preliminary step in that direction. Another aspect of agricultural development has also been considered: rural poverty. Its possible links with the former has been investigated. On the basis of the findings, possible inferences about the nature of agrarian development and trends in poverty have also been made.

Plan of the Study

The entire work has been divided into five chapters. In the first chapter the concept of surplus and its historical significance have been discussed. The first section outlines the importance of surplus as a tool of historical analysis. After pointing out its role as an explanatory variable in civilizational progress, in the second section the concept of economic surplus has been discussed in detail. Its distinction from marketable surplus has also been outlined. In the second chapter, detailed method of estimation of surplus and that of the rate of return is given. The third chapter discusses the findings of the study. Relationships between trends in surplus and that in poverty have been looked into. In the fourth chapter, trends in the rate of return in Indian agriculture have been discussed. Its possible links with the nature of economic development have been examined. Different theoretical possibilities to raise the rate of return have also been discussed. In the concluding chapter, broad conclusions are arrived at after briefly summarizing the findings of the study. Essential constituents of an effective policy directed towards poverty alleviation have been pointed out. Broad conclusions regarding the expansion in surplus as well as its productive accumulation have been made. Finally possible lines of research, further into the area, have been pointed out.

CHAPTER I

CONCEPTS OF ECONOMIC SURPLUS AND ITS HISTORICAL SIGNIFICANCE:

A LITERATURE SURVEY

Surplus as a Tool of Historical Analysis

One of the most powerful and fruitful concepts in economics is that of the social surplus product. Indeed it is a concept which is applicable to the entire history of evolution of human societies ranging from those with simple economic structures to those with highly complex ones. It is a concept that helps to explain this evolution. The roots of human civilisation lie in the emergence of social surplus and later on, the increase and productive use of this surplus, under the historical condition of social division of labour. This gave impetus to improvement in the productivity of labour, which further increased the size of the social surplus resulting in ever more advanced divisions of labour and more and more complex economic and social structures.

The above is the bare outline of the reasoning on the basis of which we may put forward the proposition that it is the form of generation and accumulation of social surplus which underlies and explains the evolution of complex socio-economic formations which we see in history. Two logical implications of such reasoning, which occupy a central place in our historical analysis, must be noted. First is the notion of the surplus product itself. Second, this social surplus product becomes an "independent explanatory variable accounting for the rise of complicated socio-economic formations".[1] Systematic production of surplus is found to be associated with the rise of classes. Putting it simply, a ruling class appropriates and leaves off the surplus produced by the working classes; therefore these two main classes come to have an antagonistic relationship characterised by class struggle. With the emergence of antagonistic mode of production, surplus labour (which is embodied in surplus product) as an abstraction becomes the indispensable tool, equally applicable to all class divided societies, in analysing historical changes. Social surplus product, thus,

[1] Engels (1948), cf. Cagler Keyder (1975), 'Surplus' in *Journal of Peasant Studies*, no. 2, p. 221.

under conditions of social division of labour, explains humankind's progress from pre-history to modern days. In historically recorded times (including in the latter concept archaeological records) class divided societies are at least seven millennia old. Both the Egyptian civilisation and the Indus Valley civilisation appear to have been based on the appropriation of surplus product from a class of workers who were either slaves or had slave-like status. Social evolutions, get more visibly reflected in, firstly, the separation of crafts from agriculture that has laid the basis for the modern industrial development in today's world. Secondly, we see the separation of town from country. Finally, the division of society into the modern classes, which have mutually antagonistic social relations, took place. The evolution of complex social institutions, has of course, progressed side by side.

A number of historians have successfully established the idea that the emergence and accumulation of social surplus product, on an ever-increasing scale, was the essential pre-condition for civilisational progress. A short journey down the course of the history of evolution of human civilisation, the account of which is given by several historians, anthropologists, archaeologists and ethnologists, will definitely help in validating the line of reasoning given above. But before that, as mentioned earlier, the basic idea of the term *social surplus product* must be made clear. Melville Herskovitz defines *surplus* as "an excess of goods over the minimum demands of necessity".[2] Similarly, for Gordon Childe, *social surplus* appeared as "food above domestic requirements".[3] In these definitions social surplus product appears as that part of the product of human labour which is over and above what is required for subsistence that is determined socially. It is with this notion of "necessary product" required as a means of subsistence, that we derive the notion of surplus product, which, in turn, will be the tool for analysing historical changes.

Humankind's interaction with Nature, i.e. the labour process, had as its basic objective, in the most primitive societies, the exploitation of the natural environment by hunting and gathering food. The entire industry of human labour was preoccupied with the urgency of hunting and collecting food in order to sustain and reproduce the small communities making up the human race. The precariousness of their situation

[2] Melville J. Herskovitz (1952), *Economic Anthropology,* New York.

[3] Gordon V. Childe (1952), 'The Birth of Civilization' in *Past and Present*, II, November.

seldom allowed humans to engage in activities other than food-gathering. The dazzling artistic achievements of these societies were possibly connected to the magical belief that painting the animals hunted on walls of underground caves would help them to multiply and ease the process of the hunt. Pictures of wild animals drawn in underground caves, found in France and Spain have been dated back to the Ice Age. However, this cannot be considered as art for art's sake. Also, it is not possible to speak of any surplus set aside for this purpose, for at least two reasons. First, these artistic expressions were not works of specialised individuals. Secondly, these artistic activities were not leisure activities, but a part of the necessary requirements, given their magical belief system.

Knowledge was being developed through repetitions of the same actions, through empirical knowledge of nature and through more or less accidental inventions and discoveries. Thus, with this gradual accumulation of knowledge, the physical effort required to achieve the necessary product was increasingly reduced over time. This was the first sign of an increase in productivity of labour, which created for the first time the economic condition for the withdrawal of some effort from purely hunting and food-gathering activities, and thus for a rudimentary division of labour.[4] This small increase in labour productivity obviously changed the precarious situation of food availability into a slightly more regularised one. "The discovery of particularly rich hunting-grounds or fishing-beaches makes possible transition from the nomadic state to that of hunters or fishermen who are semi-settled (with seasonal alteration of dwelling place) or even completely settled."[5] This transition further increased the productivity as not only more labour could be diverted towards tool making but also communities could accumulate and keep with them more tools. This was the appearance of the "first form of social surplus product", a "permanent surplus". Though small in size, this surplus had three original functions to perform. First, it had to create food reserves in order to prevent or at least mitigate the recurrent famines. Secondly, it had to make possible a more advanced division of labour leading to specialisation. Finally, it had to make possible a more rapid increase in population as more mouths could be fed in order to have more hands. With all these at

[4] . Division of labour between the sexes, however, is the first possible form of division as revealed by the description by Raymond Firth.
[5] Mandal, E. (1971), *Marxist Economic Theory*, pp. 26-27.

hand, the way to increase the size of the social surplus product was made clear, but at the same time it had its origin in the social surplus first created by the society.

With the emergence of a small permanent surplus in the hands of human communities settled in naturally richly endowed areas, the material conditions were created for the successful carrying out of the first and the most important social revolution – *the Neolithic Revolution*. The discovery that seeds of certain wild grasses and cereals occurring in nature, if collected and sown would give a multiple of the original amount sown; and the slow improvement in varieties, is generally attributed to women of the primitive communities by scholars of prehistory. The argument is that the men engaged primarily in hunting and fishing. Human societies thereby started cultivation, and domestication of animals that provided a motive power for traction and transport. But this poses pre-condition of existence of a substantially large social surplus for two reasons first, items of food to be used as inputs either in hunting and fishing. Human societies thereby started cultivation and domestication of animals, which provided a motive power for traction and transport. As Gordon Childe writes:

> "It happens that just in those regions of Hither Asia where ancestors of wheat and barley grew spontaneously, there lived also wild sheep, goats, cattle, and pigs. Now the hunters whose wives were cultivators had something to offer some of the beasts they had hunted - the stubble on grain plots and the husks of the grain....the oldest neolithic societies known to the archaeological records consisted of mixed farmers who have already domesticated some or all of the beasts named above."[6]

But this poses a necessary pre-condition- i.e., the existence of a substantially large social surplus for two reasons. First, out of this surplus a part could now be diverted towards agriculture or livestock rearing as inputs, and secondly, as return to these inputs takes place only with a time lag, a sufficiently large stock of food items was necessary to be carried over during the intermittent period. Existence of a permanent social surplus, therefore, becomes an essential condition for carrying out this revolution. The most crucial fallout of the Neolithic Revolution, for the existence of mankind, was that it brought the production of means of subsistence under the direct control of communities, for the first time since the inception of the human species. This made possible a more advanced division of labour whereby the society could release a good amount of labour time for the making of tools and for subsidiary

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[6] . V. Gordon Childe (1985), *What Happened in History*, p. 56.

activities. This could be said to have resulted in separation of *active* methods of providing food from *passive* ones.[7] This created the material condition for the formation of craft activities that necessarily gave impetus to labour productivity by providing men with new and improved tools, as well as technical knowledge.

It is very important to mention here that all these revolutionary developments that took place during the Neolithic Revolution and resulted in more advanced division of labour and increasing productivity were conditioned by a basic division of labour between the sexes and by the great contributions of the women folk. V. Gordon Childe categorically states on the basis of ethnographic evidence that all the major achievements of neolithic society which remain so important to this day, arose from the division of labour between the sexes where men hunted and women developed agriculture, pottery, spinning and weaving. He also relates the domestication of animals to the women's work of domesticating plants and we cannot do better than to quote extensively from his *What Happened in History*:

> "Among them while men hunted, women - we must suppose - had collected among other edibles, the seeds of wild grasses, ancestral to our wheat and barley. The decisive step was deliberately to sow such seeds on suitable soil and cultivate the sown land by weeding and other measures. A society that acted thus was henceforth actively producing food, augmenting its food supply... This was the first step in the neolithic revolution...."[8]

Among the primitive societies with semi-settled or settled status, the organisation of labour was based on co-operation. One of the earliest considerations in this regard was an outcome of a pressing demand for protection against wild beasts or human foes.

> "In the western villages on Alpine moors..., at Skara Brae in Orkney... public works must be communal not individual works. Many neolithic villages in western Europe and in the Balkans are surrounded by ditches, fences, or stockades as a protection against wild beasts or human foes, and these, too, must have been erected by collective effort."[9]

One of the greatest obstacles in ensuring a regular supply of food was the compulsory periodical clearing of forests, which inevitably required co-operation among the members of the society. With the gradual evolution of advanced methods of cultivation a greater degree of stabilisation was achieved. There was undoubtedly a surplus available to the community that was utilised to facilitate the division of labour into active and passive methods of food-gathering. However this social surplus was

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[7] . Mandal, E., op. cit. p. 29.
[8] . Childe, op. cit., p. 55.
[9] . Ibid, pp. 66-67.

not yet large enough to give rise to private property.[10] We could locate the seeds of private property in the stabilisation of agriculture and cattle rearing. In more primitive societies, due to small size of the social surplus, its concentration into a few hands was prohibited by different social institutions.[11] In food gathering societies, the concentration of surplus was also limited, in the first instance, by the lack of knowledge of preservation and also by the lack of means of preservation, namely, salt. Kosambi writes:

> "This means sharing any surplus, or most humans would starve...In primitive human groups which go beyond the stage of utter scarcity the sharing eventually became a social obligation..."[12]

With the stabilisation, the size of surplus started growing although the institution of private property did not emerge on any significant scale. Nevertheless, with the solution to the problem of periodic clearing of land, the social process of co-operative labour was undermined in a newly emerging situation.

The next substantial leap in the generation of social surplus product came with the knowledge of the effects of leaving land fallow, and irrigation. The importance of leaving land fallow or restoring its fertility or preventing its decay was recognised long back by pre-historic communities and different methods were devised to this end. For example, burning of bushes grown on land and application of animal manure effecting a rapid regeneration are found to be practised. Childe observes:

> "...a plot be allowed to go back to bush and then cleared again by burning...Mixed farmers can graze stock on plots... then the droppings of the flocks and herds will serve as fertilisers...or human excreta or animal manure can be deliberately collected and applied to exhausted fields...One or other of these devices must have been employed in Greece and the Balkans in late neolithic times, for their we find successive settlements built upon the same site just as much as among the irrigation cultivators of Hither Asia."[13]

The knowledge of irrigation methods and natural facilities of irrigation made enormous impact on the size of the social surplus product and consequently, on further development of human civilisation. This could be explained no better than to compare the Mesopotamian agriculture of the late third millennium BC with Indus Valley agriculture. The former was based on canal irrigation, whereas the latter was

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[10] . Mandal, E., op. cit. p. 30.

[11] . Bernard Mishkin for Maori distribution, Margaret Mead for Papuan people of Arapesh, George Balandier for Bokango tribes in equatorial Africa, James Swann for Indians of cape Flattery and Solomon Asch for Hopi Indians have investigated these social institutions, cf. Mandel, pp. 31-32.

[12] . D. D. Kosambi (1994), *The Culture and Civilisation of Ancient India*, p. 31.

[13] . Childe, op. cit., pp. 64-65.

solely dependent on flood irrigation. This fact had considerable impact on the urban revolution in two cases - a number of cities developed in Mesopotamia whereas in Indus Valley it was limited to just two, Mohenjo-daro and Harappa. To quote Kosambi:

> "In (Mesopotamia) a smaller area and one not more fertile than that covered by the Indus basin *there were over a dozen prominent cities and several lesser ones*. Each with its hinterland constituted an independent state with its own manufacture and trade...(In Indus Valley) This surplus supported the trader and navigator, the people who lived in palatial houses or poorer quarters, the artisans who manufactured articles for use at home and sale overseas and the lowly humans who kept the city habitable. *The surplus apparently remained constant from almost the very beginning of the cities to nearly the end. No new cities, no well-advertised changes of dynasty as in Egypt, no real, massive expansion into the equally fertile but forested plain of the Ganges mark the Indus culture.*"(Italics mine)[14]

This completely revolutionised agricultural techniques. This created the material conditions for two very important developments. Firstly, with the emergence of a substantial permanent social surplus, independent development of specialised and perfected craft techniques were made possible. Once again contributions of women in this regard are immense. Childe notes:

> "To accomplish the neolithic revolution mankind, or rather womankind, had not only to discover suitable plants and appropriate methods for their cultivation, but must also device special implements for tilling the soil, reaping and storing the crop, and converting it into foods."[15]

And he adds:

> "All the foregoing inventions and discoveries were, judged by ethnographic evidence, the work of the women. To that sex, too, may by the same token be credited the chemistry of pot-making, the physics of spin, the mechanics of the loom, and the botany of flax and cotton. On the other hand, in the prehistoric societies we have cited and in others like them in Europe and right across Asia to China, the feminine achievements have been welded into a single economy with others attributable to men....the care of flocks and herds and the processes and equipment pertaining thereto fall to the men."[16]

Before this, the size of the social surplus prevented complete specialisation and it was not possible for the craftsmen to disassociate themselves completely from the direct activities of food gathering.[17] Secondly, it also created conditions for, and in fact generated the process for the beginning of town life, whenever natural conditions allowed. However, it was not a phenomenon which the primitive communities

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[14] . Kosambi, op. cit., p. 62.
[15] . Childe, op. cit., p. 65.
[16] . Ibid, p. 66.
[17] . A more recent example has been given by Martin C. Yang, *A Chinese Village*, cf. Mandal, E., op. cit., p. 27.

experienced independently. There are evidences of both independent as well as induced process of emergence of townships.

To explain these achievements of humankind in the neolithic period it is not necessary to assume any substantial "industrial specialisation within the village apart from a division of labour between the sexes."[18] Further each village was potentially self-sufficient, rather than actually. These two features distinguished "neolithic barbarism" from its predecessor and successor.

> "Intercourse with other groups was probably more frequent and more extensive than among palaeolithic food gatherers."[19]

And,

> "This potential self-sufficiency of the territorial community and the absence of specialisation within it may be taken as the differentiae of neolithic barbarism to distinguish it from civilisation and the higher barbarism of the Metal Ages."[20]

These achievements of the Neolithic Revolution resulted in a quantum jump in population. But neolithic communities had their contradictions which had to be resolved for any substantial progress of humankind. The first of these was the pressure of increasing population on land. Expansion of the area cultivated as well as pastures became necessary. Though the land was abundant, this expansion of food producers was often at the cost of food gatherers and occasionally resulted in confrontation with other communities of food producers. There are numerous archaeological evidences of such confrontations among communities. The second contradiction lay in the very nature of self-sufficiency of neolithic villages. Any local failure resulting from reasons beyond human control could lead to famines and extinction of communities which were self-contained and isolated. Small size of surplus did not allow it to tide over prolonged or successive disasters. "The urban revolution", Childe writes, "eventually offered an escape from both contradictions", and it is in this light that the realisation of the potentialities of the separation of the town from the country should be understood.

Discovery of the hard metals and their use in agriculture and in crafts resulted in a fresh leap in labour productivity. The period since the discovery of copper, in the sixth millennium BC upto the discovery of iron, around 1300 BC constitute the most

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[18] . Childe, op. cit., p. 67.
[19] . Ibid, p. 69.
[20] . Ibid, p. 67.

important stage in this technical revolution. Two important implications have been noted by the historians of this metallurgical revolution. In the field of agriculture which remained the basic economic activity, introduction of metal equipment, particularly that of the iron axe-head and ploughshare resulted in a quantum jump in productivity, by way of a considerable extension of cultivated area. Thus for ancient India Kosambi explains the extension of the cultivation from the plains of Punjab to the fertile valley of the Ganga entirely in terms of the new ability to cut the dense forests living the river once the use of iron became known at around the end of second millennium BC. Expansion of the main Aryan settlements in India, very close to the foothills of the Himalayas was made possible in the first millennium BC with ample availability of metallic ores. In fact, the urban revolution, after the destruction of Indus Valley Civilisation, was based, among other things, on an attempt to tap sources of these ores lying in southern Bihar plateau region. The resulting increase in the size of the surplus product created conditions for the rise of more developed craft techniques. Increase in specialisation was made possible. Also conditions for the separation of town and country were created. Both these processes were greatly helped in by the growth of population, which could be sustained by substantial 0increase in social surplus product. "The increase in the surplus of foodstuffs supplied the means of subsistence for this urban labour force". Also, "at first essentially a technique of luxury and ornamentation, the metal-working craft later became specialised in the making of tools and weapons of all kinds. The crafts won final independence with the labour of the smith."[21]

Higher Barbarism of Copper Age witnessed metallurgical operations which by their very nature required *specialists*. These were the first industries that were not conducted within the households for domestic requirements. These were produced by the specialists and exchanged with their customers. Their sustenance, therefore, was dependent on the surplus produced by the food producers. Childe notes:

> After the magicians, they may be the first class to be withdrawn from direct food-production. They are therefore not immediately dependent on the land for food; their livelihood depends upon the possession of portable skills, and generally also of portable goods, which they exchange for food."[22]

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[21] . Mandal, E., op. cit. pp. 38-39.
[22] . Childe, op. cit. p.86.

As the use of metal tools was inducted into necessity, two major fallout of it could be noted. First was the production of surplus for *specialists*, a newly emerging class, beyond domestic needs. This feature, distinct from the neolithic barbarism, induced peasants more and more to produce surplus in order to acquire superior tools. This, we could say, was the first incentive to produce over and above domestic needs. Secondly, self-sufficiency of the pure neolithic village was greatly undermined, rather had to be sacrificed, as metallic ores were by no means common, generally found in non-cultivable, uninhabited areas.

Urban revolution, based on substantial increase in social surplus, of the Metal Age was also facilitated by the discovery of carts run on wheels and dragged by draught animals. Increasing exchange and transfer of surplus from the country to the town was greatly enhanced and consequently there was considerable increase in urban settlements. With the increasing specialisation and development of transport, reliance on imported materials increased substantially, and a new class of artisans dependent on imported materials emerged. Furthermore, with the development of pottery on the spinning wheel this activity escaped from the hands of the women and reached into men's territory who now specialised in pottery.[23]

The reasoning that under historical conditions of division of labour, a social surplus product forms the basis for, first, separation of crafts from agriculture and secondly, separation of town from country, has been explained. But the third aspect, i.e., social surplus as a causal factor in the emergence of class-divided societies needs some more explanation. One has to bear in mind that these three developments are neither mutually exclusive nor strictly sequential in time. In the light of the above description, therefore, we look into this third aspect. The small size of the social surplus has already been pointed out as a reason for the non-emergence of private property on any significant scale on the one hand and of class division in the society on the other.

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[23] . This was generally associated with a decline in women's participation in this new age. Childe observes: "In contrast to the predominantly female contributions (in neolithic period) ... the discoveries and inventions just considered seem all due to the men, and certainly strengthened their economic position. By relieving women of a lot of heavy but essential tasks in the way of hoeing, carrying burdens, and making pots, they cut away the economic foundations of mother-right." (Ibid, p. 94)

B. Malinowski, while tracing the roots of class division, particularly that of slavery, notes:

> "Under primitive conditions it [slavery] does not exist. It has no economic basis at a time when a pair of hands can produce only as much and no more than one mouth consumes. It comes into being when the cumulative results of labour can be stored, or integrated into large works of construction."[24]

Thus, existence of a substantial social surplus constitutes the essential pre-condition for the emergence of a class abstaining from the labour process at the expense of the remainder of society. At a certain stage of development of the productive forces, the social process of production could generate this condition. Making slaves the prisoners of war was one of the important forms in which society was first divided into classes. Another way in which it was realised was that of obligatory payment of tribute to the abstaining classes. Mandel notes:

> "Something which is at first voluntary and intermittent later becomes obligatory and regular. By the application of force, that is to say, by the organisation of the state, a social order is established which is founded on the surrender by the peasants of their surplus of foodstuffs to the new masters."[25]

It must be noted that it was not only the size of the total social surplus product that mattered, its concentration also proved to be essential to make any productive use of tiny surpluses available with individuals. And thus it was in this way that the process of concentration of social surplus started, and with it came the emergence of townships and a whole class of people who lived on the surplus product of agricultural labour. With the accumulation and concentration of surplus, began the differentiation of the surplus product and that of the production process itself. This resulted in the development of various arts and of the knowledge of rules and techniques which guaranteed the maintenance and development of productive forces in agriculture.

In the tradition of classical political economy, therefore, the significance of social surplus as a tool of historical analysis is unquestionable. This idea has been accepted not only by the majority of economists but all anthropologists, archaeologists and ethnologists, after the empirical data of contemporary sciences confirm the validity of this basic hypothesis. One criticism of the hypothesis has come

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[24] . B. Malinowski, *Freedom and Civilisation*, p. 301, cf., Mandel, p. 39.
[25] . E. Mandel, op. cit., p. 40.

from Harry W. Pearson.[26] His opposition to the basic proposition can be understood as having two fundamental points. Firstly, he opposes the concept of surplus which is used in a way as to be the enabling factor in the process of social and economic change. According to him there are two logical ways in which one can define surplus, i.e., two ways to define "subsistence needs". First is a notion of minimum "biological fixed requirements" and if one is using this notion then the resulting surplus will be an "absolute" one. Alternatively, minimum subsistence needs can be socially derived in which case the resulting surplus will be "relative" in nature. Secondly, he opposes the 'crude economic determinism upon "the narrow capacity of the human stomach".' Such causation, he believes, is an "inadmissible abstraction from the social conditions".

According to Pearson, the use of surplus as an enabling factor in the historical process of formation of complex socio-economic structures results from confusing the absolute notion of surplus with the relative one. He says, "only the absolute surplus would have [the causal effects] if its existence and relevance could be established." The relative surplus is a result of social process and existing social institutions do have a central role in determining it. He says:

> "It is true that such surplus may be made to appear along with a windfall increase of material means, or a more permanent rise in productive capacity; but they may also be created with no change whatever in the quantity of subsistence means by re-allocating goods or services from one use to another."[27]

And even further:

> "There are always and everywhere potential surpluses available."[28]

It becomes very clear after refuting any role of relative surplus in explaining the emergence of complex socio-economic institutions, that it is only in an absolute sense of the concept that one can possibly explain it. However, there is no way in which one can determine that minimum biological requirement.

> "...if it is difficult to establish the subsistence minimum for one individual, it is impossible to determine it for a society. There is no historical evidence of a whole human society ever having lived at this level."[29]

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[26] . H. W. Pearson (1957), 'The Economy Has No Surplus', in K. Polanyi, Conard M. Arensberg and Harry W. Pearson (eds) *Trade and Markets in the Early Empires.*
[27] Ibid., p. 323.
[28] Ibid., p. 339.
[29] Ibid., p. 324.

Now, since one cannot derive this measuring rod of minimum subsistence, use of the surplus concept can only be in a "heuristic sense". Therefore, there is no logical evidence that the emergence of "private property, barter, trade, division of labour, markets, money, commercial classes and exploitation" are results of economic surplus. It is basically this confusion between the absolute notion of surplus and that of relative one that was also at the heart of the classical school, from which the basic ideas of Marxism were derived and later "superimposed" upon Morgan's general theory of social and economic evolution, which resulted in employment of the concept of surplus in a heuristic sense.

Now it needs to be mentioned that the distinction between 'absolute' and 'relative' notions of surplus and their significance in explaining social and economic evolution is something which has been done by Pearson himself. Neither classical economists nor Marx had ever employed the notion of a "biological minimum" level of subsistence in their economic analysis. However one should not go to the extent of denying any historical significance of this notion of necessary product as Pearson has done. Pearson does this because of the fact that the comprehensiveness of the analysis has been restricted to a situation where the primitive communities have achieved a minimum civilisational progress. Thus his historical analysis is restricted to the Neolithic Revolution and thereafter. The very fact that several hundreds of tribes had perished in their struggle for bare subsistence before the Neolithic Revolution outlines the historical significance of the notion of a biological minimum subsistence. Therefore his assertion that "always and everywhere", "there are potential surplus" is quite untenable.

He is perfectly correct in emphasising the "social" aspect in generating and accumulating surpluses. He is also correct in saying that it is only in a 'relative' sense that we can make use of it in historical analysis. But his proposition that the notion of a 'relative' surplus cannot be associated with any causal effects is totally wrong. He is correct in saying that there is a role of social institutions in the process of production and distribution, but there is no answer to the question: what is the origin of these institutions themselves? The appearance of a permanent and substantial surplus of food has definite connection with separation of crafts from agriculture, towns from country and the class-division of society. What he questions here is the effect of

growth of productive forces on the emergence of social surplus product. To say "they (relative surplus) may also be created with no change whatever in the quantity of subsistence" is to nullify the whole struggle for existence, for the necessary product could not be forced down infinitely even by the "society". The existence of a sufficient social surplus constitutes the necessary condition for social evolution and transformation.

Concepts of Economic Surplus

While examining the role of surplus in the evolution of complex socio-economic formations, focus of the analysis was on the three crucial developments - industrialization, urbanization and class-division of society. However, this was not meant to undermine other evolutionary processes which occur side-by-side.[30] A whole set of socio-economic institutions has evolved in the course of the civilizational progress. Only a comprehensive analysis, historical in nature, which takes into account the mutual relationship of one with another at different stages of civilizational progress will be able to point out definite causation and their implications.

In an attempt to make this study more focused and specific, I concentrate on the very concept of surplus and the contexts in which different notions of surplus have been applied by different economists. Previously, in analysing historical changes the concept of surplus as *that part of the total product of the labour process which is over and above what is required as means of subsistence* was used. At the same time, it is to be emphasised that the form of surplus has not remained the same. Not only has the size of social surplus product increased over time, but its nature has also undergone significant changes in accordance with the evolving socio-economic institutions.

Currently, in economic literature various concepts of economic surplus are used by different economists. At the outset we have to distinguish 'economic surplus' from 'marketable surplus'. In the first concept different notions and measures of surplus can be put as one or another variant of economic surplus. Secondly, an altogether different notion of surplus is widely used, particularly, in the context of

[30] Some of the important processes have been evolution of family, patriarchy, institution of caste in Indian context, etc.

industrialization and surplus transfer from agriculture and that is marketable surplus. A few words on this distinction are necessary.

As has been pointed out, a complex set of socio-economic institutions have evolved during the course of development and they owe their origin to the economic surplus generated at different stages of development. The institution of market or exchange is one of them which was an inevitable outcome of the separation of crafts from agriculture, and later on, separation of town from country. The institution of exchange has also undergone qualitative changes over time and the market as a specific form of exchange institution, while its origins are far back in history, has reached its full culmination only at a certain stage of economic development that is to say, in the capitalist order of society.[31] Marketable surplus, therefore, cannot said to be independent of the concept of economic surplus (social surplus product) and it has to be contextualized in the broad category of the latter. It may appear that the marketable surplus can be said to be the *commoditified part of economic surplus*, i.e., the part of the surplus which is sent to the market and exchanged for money. But this is not correct, for marketable surplus (or marketed surplus) is *not necessarily a part of economic surplus alone*. It is that part of the *total produce* which is exchanged for money, and the value of the total material cost of production and labour cost have no direct bearing on it as long as these costs are not fully monetized, but are partly met in kind out of the produce, and partly purchased. In agriculture unlike in manufacturing this is usually the case. On the other hand total input costs have a direct bearing on economic surplus and the latter is determined by it (i.e. by the conditions of production). For marketable or marketed surplus, however, the retained part of the total produce is the determining factors. Therefore, it is quite likely that for some individuals or class of individuals "marketable surplus may exceed the economic surplus and there may be positive 'marketable surplus' with zero economic surplus".[32] The confusion between marketable surplus and a *part* of economic surplus marketed may arise from implicitly assuming that all input costs are in kind out of the output, and lead to overemphasising the role of marketed surplus in economic development, in general, and in industrialisation, in particular. This distinction has important

[31] Where development of markets is completed with the emergence of market for a crucial commodity - labour-power, as a result of class division of society of a particular nature.

[32] Various logical possibilities are discussed at a latter stage while discussing the concept of marketable surplus.

bearings on the whole debate on financing of industrial development out of agricultural surplus. This distinction of marketable surplus from economic surplus has to be borne in mind, but at the same time the relationship of the former with the latter has also not to be forgotten, particularly in the context of its emergence at a certain historical stage of growth of economic surplus.

So much about this distinction at this stage. The concept of economic surplus is being taken first for discussion below, after which marketable or marketed surplus will be discussed. The discussion here, of surplus, has been put in a specific historical context of today's society, i.e., of a capitalist social order. Occasional references, however, to other modes of production have been made wherever necessary and the concept of surplus discussed in their contexts. In the course of theoretical discussion, therefore, the crucial distinction between surplus product and surplus value has been maintained to recognise the fact that transformation of social surplus product into surplus value takes place under specific historical conditions i.e., at a certain stage of development of commodity economy.

The concept of surplus and its centrality to economic analysis had been recognised long before the arrival of the first theory of value with Adam Smith. The Physiocrats, the French school of eighteenth-century *economistes*, were the first to conceptualise the notion of surplus in the form of *produit net*. It is true that the idea of surplus had struck intellectuals, even before that, whoever was trying to solve the puzzle of exchange value, but was never given a theoretical structure.[33] But the "revolutionary break", which the Physiocrats brought about with their predecessors, the mercantilist theorists, signifies the first true attempt to analyse the capitalist system objectively. In the Mercantile system, where the notion of surplus existed only in relative terms - gain by one is loss of other; the object of inquiry was the sphere of circulation. "The Physiocrats transferred the inquiry into the origin of surplus-value from the sphere of circulation into the sphere of direct production, and thereby laid the foundation for the analysis of capitalist production".[34]

Their objectivity of analysis was clearly reflected in the works of Quesnay where he made the exchange relations in the society the object of study and found that

[33] The idea of surplus could be found in the works of Sir William Petty (1623-87) and in more developed form in the works of Richard Cantillon (1680-1734), *Essai sur la nature due commerce en general*, cf., J.A. Schumpeter, (1954), *History of Economic Analysis,* pp. 209-223.

[34] Marx (1978), Theories of Surplus Value, part I, p. 45.

these are governed by "certain objective economic laws, which operated independently of the will of man and which were discoverable by the light of reason".[35] Therefore, these objective laws governed the economic order and consequently the movement of the social order as a whole. Since the Physiocrats lacked any theory of value, their confusion between value and physical productivity in agriculture led them to a situation where they could justify the existing bourgeois order as a natural one. Their conception of capital as a material form of existence *"in isolation from the social conditions* in which they appear in capitalist production"[36] robbed them of any dynamic analysis as far as system as a whole is concerned. Schumpeter pointed out that their "intellectual re-creation" as one resulting in an ideal picture in a practical sense in their doctrine:

> "... since the Physiocrats lacked the conception of social progress, so that the theoretical picture of reality could be considered as immutable and could in consequence, become an absolute ideal and an element of a divine world order much more easily than could have happened if they had been conscious of the changeability of social facts".[37]

This unchangeability of social facts in their doctrine was bound to result in the conception of bourgeois order as a natural one. It was this *ordre naturel* which was conceived as the most advantageous for mankind.

In order to analyse the objective economic laws governing the exchange relations in society, the Physiocrats, made the source and explanation of the *produit net* as the object of their inquiry in the sphere of production. They very correctly pointed it out that the source of surplus value lies in the labour process, i.e., in the social process of production, however only in agriculture. To have any notion of surplus generated in the labour process one must have an idea of what is the magnitude, relative to which this 'surplus' is defined as being over and above, given the output. The Physiocrats correctly emphasised the value of labour power being fixed as minimum of wages of the *stipendies* as the pivotal point in their theory. The value of the labour power, not exchange values as the minimum of wages was an unchangeable magnitude fixed by nature.[38] "For the wage - labourer...the *minimum*

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[35] R.L. Meek (1962), *The Economics of Physiocracy*, p. 19, cf., Dobb (1979), *Theories of Value and Distribution Since Adam Smith*, p. 40.
[36] Marx,op. cit., p. 44.
[37] Schumpeter, J. A., (Year), *Economic Doctrine & Method*, p. 48.
[38] The problems with their conception of value are commented upon a little later. This will not make their conclusion illogical, for as Marx pointed out. This in no way affects the abstract correctness of their conclusions.

of wages, equivalent to the necessary means of subsistence, necessarily becomes the law which governs his exchange with the owner of the conditions of labour".[39] One of the clearest expositions of the notion of surplus was provided by Turgot:

> "... as soon as wage - labour has arisen, the produce of land is divided into two parts: the one includes the subsistence and the profits of the husbandman, which are the reward of his labour and the condition upon which he undertakes to cultivate the field of the proprietor. What remains is that independent and disposable part which the *land gives as pure gift to him who cultivates it*, over and above his advances and wages of his trouble; and this is the portion of the proprietor, or the revenue with which the latter can live without labour and which he uses as his will".[40]

Therefore return to the proprietor, i.e., the landowner in the form of rent was the only form in which *produit net* was appropriated.

One of the fundamental contention of the Physiocrats was that only agriculture was able to produce *produit net* and only those working in the area of agriculture were *productif*, by the virtue of being able to produce *produit net*, and all other classes working in other lines of human activity were *sterile*. The existence of a class of landowners who lived upon the surplus produced by the *productif* workers in agriculture was made the evidence of the existence of the surplus. But it was made clear that the part of the produce which resulted from the labour process over and above the subsistence required by *stipendies* and the profit on the stock was a *gift of nature* to the cultivator, i.e., it was the *productivity of nature* which resulted in *produit net*. In all other lines of human activity all classes were *sterile* as they could not produce *produit net*, but merely changed the form of the material product which they received from agriculture and in this way they added to the value of the produce but they did it only to the extent that this addition in value was equal to their *strict necessaire*. The value of the product of the manufacturing, thus, was defined in a way so as to preclude any possibility of value addition. The nature of the exchange relations between agriculture and industry on the one hand, and between cultivator and proprietor on the other, in their theory went well fitted in the whole scheme. Schumpeter notes:

> "The productive class...retain for themselves part of the produce, of which in turn they pass a part to the sterile (industrial, etc.) class. The latter adds value to the product by their manufacture, but does so merely to the extent to which its members themselves consume; in consequence, they do not really produce value. The productive class passes this part of the produce to the sterile class by

[39] Marx, op. cit., p. 56.
[40] Turgot (1766), *Reflections sur la formation et la distribution des richesses*, cf., Marx, ibid., p. 54.

> exchanging food and raw material for industrial products. Since the latter, however, contain food and raw material from former exchanges, and that to exactly the same amount, the value which had been passed on returns to the productive classes".[41]

The fundamental error in the theory of the Physiocrats lies in their conception of value, which resulted in their confusion of physical productivity with value productivity. Value for them was merely use-value and reflected in material forms. Their concept of surplus value, hence, depends on the material value of the *strict necessaire*, and not on the necessary *labour time*. As Marx points out:

> "Their method of exposition is, of course, necessarily governed by their general view of the nature of value, which to them is not a definite social mode of existence of human activity (labour), but consists of material things - land, nature, and various modifications of these material things."[42]

Given their materialist conception of the value, it was very clear that surplus of use-values directly showed itself in agriculture as use-values produced over use-values consumed by the labourer. Value of the industrial product was so defined as to negate any possibility of *produit net*.

Given this conclusion that only cultivators are *productif* producing a *produit net*, rent is conceived as the only form of surplus value. Profit on capital remains non-existent, as it is perceived as "a kind of higher wages" paid by the proprietor, consumed by the capitalists as revenue, and, therefore, "enter into their costs of production in the same way as the minimum wages".[43] Interest on money also does not constitute surplus value in their analysis. Turgot gives justification of it by pointing out that with money capital one could buy land and, consequently, rent, and, therefore, "his money capital must bring him in as much surplus-value as he would receive if he converted it into landed property."[44] Thus, this "too is not newly created value, not surplus value; it only explained why a part of the surplus value gained by the landowners finds its way to the money capitalists in the form of interest, just as it is explained on other grounds why a part of this surplus value finds its way to the industrial capitalists in the form of profit".[45] Rent; therefore remains the only form in which surplus value is appropriated. It was this contention that was challenged by the

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[41] Schumpeter, op.cit., page 56.
[42] Marx, op.cit., p. 46.
[43] Ibid., p. 47.
[44] Ibid., p. 47.
[45] Ibid., p. 47.

English classical school and the latter established that profit is the usual form in which surplus value is appropriated apart from rent and interest.

This was a result of the particular notion of value - as use-value reflected in material forms of existence in complete isolation from the social conditions. The existence of capital, therefore, was also perceived as material object and not as a definite social relation - one confronting the labour as condition of labour in the hands of a few, divorced from the labour. The moment when this social relation is introduced in the analysis, the origin of the surplus could be found in the labour process as one generated by the labour confronting capital as conditions of labour. This was the achievement of Smith that fashioned a break from the Physiocratic notion of *produit net* and its source, where the surplus was not a result of human labour but was a *gift of nature*. This correct understanding of the historical process - social surplus facilitating division of labour resulting in accumulation of stock and appropriation of landed property - brought the labour as the source of surplus value replacing Nature. Tracing this historical development, Smith says:

> "In this state of things [preceding accumulation of stock and appropriation of land], the whole produce of labour belongs to the labourer; and the quantity of labour commonly employed in acquiring and producing any commodity, is the only circumstance which can regulate the quantity of labour which it ought commonly to purchase, command and exchange for".[46]

Further,

> "As soon as land becomes private property, the landlords demands a share of almost all the produce which the labourer can either raise, or collect from it. His rent makes the first reduction from the produce of the labour which is employed upon land.
>
> It seldom happens that the person who tells the ground has where withal to maintain himself till he reaps the harvest. His maintenance is generally advanced to him from the stock of a master, the farmer who employs him, and who would have no interest to employ him, unless he was to share in the produce of his labour, or unless his stock was to be replaced to him with a profit. This profit makes a second deduction from the produce of the labour which is employed upon land".[47]

Here lies the origin of surplus value when the produce of the labour process is divided into three component parts, apart from replacement of stock - natural wages, profit and rent. Thus, clearly, the labourer employed by the master is producing over an above what is required as means of consumption which is appropriated by the employer as profits and further as rent to the landlord when he says:

> "As soon as stock has accumulated in the hands of particular persons, some of them will naturally employ it in setting to work industrious people, whom they

[46] Smith,(1937), *Wealth of Nations*, pp. 47-48.
[47] Ibid, p. 65.

> will supply with materials and subsistence, in order to make a profit by the sale of their work, or by what their adds to the value of the material"[48]

he is clearly stating the pre-condition of capitalist production, i.e., separation of labour from conditions of labour. Furthermore, the profit, which the employer is getting, is *not a result of the sale of labourer's work*, rather the sale is made at its value and the profit is *result of the unpaid labour of the labourer*. As he makes it clear:

> "The value which the workmen add to the materials, therefore, resolves itself in this case into two parts, of which one pays their wages, the other the profits of their employer upon the whole stock of materials and wages which he advanced".[49]

Thus, when the commodities are sold at their values, the surplus value originates from the fact that the worker is paid for only a fraction of the labour time contained in the produce and not for the total labour time required to produce that commodity. It is this unpaid labour time, therefore, which constitutes the surplus value.

Surplus value as a category does not exist for Smith, i.e., distinct from the specific forms it takes in profit and rent. This has been a source of error and confusion resulting in an inadequate inquiry. The source of this error - due to which this lack of surplus value as a category on its own - can be traced into his inconsistent formulation of theory of value. With the emergence of private property in land and accumulation of stock in few hands, labour, embodied in any commodity, according to him, ceases to be the standard which determines the exchange ratio between two commodities. With the identification of the unpaid part of labour embodied in any product, the amount of labour which one commodity can command becomes greater than what is embodied in it. Now, the *labour embodied* measure of value of the product, he says, can not work and one has to shift to *labour commanded* measures of value. But in doing so, he has been caught in a "vicious circle" as Marx pointed out. The disjunction between the value of labour and the quantity of labour causes the problem. The value of any commodity, when measured in terms of labour commanded, depends upon the value of labour power, which in turn, was determined by wages. But wages, consisting of means of subsistence, have their value determined by the labour which they command. Hence one is caught into this "vicious circle". The problem arises because of the fact that Smith was not able to grasp the change in exchange relation brought about by capitalist relations of

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[48] Ibid., p. 48.
[49] Ibid., p. 48.

production. There will be no problem if one considers the exchange ratio of one commodity, i.e., materialised labour with another one, for if they are exchanged at their values equal quantities of materialised labour will be exchanged. But this is not the case with exchange between materialised labour and living labour which the capitalist relations produce. Here, a greater amount of living labour is exchanged for a smaller amount of materialised labour. Smith was unable to recognise the distinction between these two kinds of exchanges and hence he abandoned, consequently, the labour embodied measure of value.

There are certain other misconceptions in his theory regarding the specific forms which surplus value assumes. He correctly points out that surplus value denotes that part of value added to the materials by the labourer over and above the quantity that pays his wages. But, he immediately terms it profit, i.e., he thinks of it in relation not only to that part of capital which is used for wage advances, but in relation to all capital including materials and wages. Thus surplus value is directly conceived in the form of profits. Differences in composition of capitals - capital involving machinery and materials and capital involving wage advances - will definitely have an influence on surplus value and profit generated.

Further, as one is very clear that it is not only profit, which makes a deduction from the value added by the labourer, but also rents are there. These two categories of surplus value are determined by completely different social considerations. The law of profit cannot be applied to the determination of rent. While discussing the latter's role in formation of prices he points out:

> "Rent, it is to be observed, therefore, enters into the composition of the prices of commodities in a different way from wages in profit. High or low wages or profit, are the causes of high or low price; high or low rent in the effect of it".[50]

This conception was the result of an almost Physiocratic element in his theory where he says that there are certain line of agricultural production where it can "always and necessarily affords some rent to the landlords", whereas in other lines it may or may not. Despite his successful recognition of rent as 'monopoly price', and thus, its being absolute ground rent, this Physiocratic element remained in his theory. Definitely it was a result of his inability to resolve the puzzle in the theory of price where he fluctuated between labour embodied and labour commanded measures of value, and consequently, contradicted his own formulations.

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[50] Ibid., p. 145-46.

As regarding another form of surplus-value interest on money capital, he considers it as "a derivative revenue, which, if it is not paid from the profit which is made by the use of money, must be paid from some other sources of revenue". Now, according to him, wages, profit and rent are the only original source of revenue. The above proposition holds good only if interest is paid out of the latter two kinds of revenue, i.e. out of profit or rent. If it is paid out of wages it in no way constitutes surplus value. It is not only with the wages, rather with the kind of use to which it is put which determines whether interest on money constitute surplus value. If money is borrowed for consumption, then it can not be said to be a part of surplus value since it does not generating value, but reflects a mere distribution of wealth. It is only when the money borrowed is put to productive use, that is, to assist labour to produce surplus-value then only interest on that money capital constitutes surplus value. Thus here the social forms of the resource determines the category.

Finally, one more clarification is needed regarding the magnitude of the surplus which Smith talks about in terms of 'net revenue'. Here also he is not free from the notion of *produit net* of the Physiocrats. Net revenue is arrived at, in his theory, by deducting the capital used up in the production process from the gross revenue. But here the capital used up includes fixed as well as circulating capital. A possible difference in interpretation may arise by his statement of "maintaining circulating capital intact". If the latter is taken to include wages also, then in this case his 'net revenue' is nothing but the Physiocrats' *produit net*. But if 'net revenue' includes profits as well as wages then it becomes "identical with the potential consumption fund of both capitalists and wage-earners, as is Adam Smith's declared intention".[51] But this 'net revenue' is a different concept from the Physiocrats' *produit net* and also from the Marxian 'surplus-value'.

As against the theory of "natural price" and contradictory notions of "market price" and "sufficient price", given by Smith, Ricardo presented a more logically consistent theory of value through which he could explain the law of profit and rent but only at the cost of some untenable propositions. He successfully resolved the confusion between the "labour embodied" and the "labour commanded" measures of value by stating that even with the emergence of private property in land and accumulation of stock the rule of value still remains the labour expended in the

[51] Dobb (1979), *Theories of Value and Distribution Since Adam Smith*, p. 63.

production of a commodity. This has an important bearing on his explanation for profit and rent as two component parts of the surplus produce. As regards rent he says:

> "Rent is that portion of produce of the earth, which is paid to the landlord for the use of the original and indestructible powers of the soil"[52]

and,

> ".... rent is always the difference between the produce obtained by the employment of two equal quantities of capital and labour"[53]

with its rise or fall depending on

> "...the inequality in the produce obtained from successive portions of capital employed on the same or new land..."[54]

Thus, the existence of rent as a constituent of surplus value was totally a result of the differing soil quality and was determined by the produce at the margin. The denial of any rent on the land at the margin clearly denied the existence of any absolute rent resulting from the monopoly in occupation of land - existence of rent was completely explained in terms of differential rent.

Ricardo's theory of profit is in fact, is a theory of surplus value as pointed out by Marx later on, because whenever he talks of profit on stocks, he takes into consideration only the portion of capital advanced as wages to labourers. Ricardo, in earlier version explained the determination of profit in the sphere of production by conditions of production. In one of the earliest versions of his theory, he explained that rate of profit in one line of production, where everything - product, capital, and hence surplus product could be expressed in terms of the product, could be expressed as a simple ratio - product-ratio to wages. This was determined in corn production at the margin of cultivation. This rate of profit in corn production also determined the general rate of profit, as there could be no two rates of profit in the economy. Thus profit depends on the "ratio of production to the consumption necessary to that production". Even while modifying this earlier version and allowing for the fact that labourers did not, only consume corn but some manufactured commodities also, he held firmly the crucial point "that general profit could not diverge from the ratio of corn produced to the corn wages involved in its production at the agricultural margin, even if there were circumstances in which in the course of adjustment the position of

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[52] Ricardo, (1971), *Principles of Political Economy and Taxation*, p. 91.
[53] Ibid., p. 95.
[54] Ibid., p. 106.

this margin might undergo some alteration".[55] Later on, in defence of his labour theory of value and the proposition that the rate of surplus in agriculture determined the rate elsewhere, he presented a more general version of the rule of determination of profit in agriculture and of the general rate of profit. According to this new rule, the rate of profit in agriculture was determined by the ratio of the total labour expended to the labour required to produce sufficient means of subsistence for the labour involved. Thus, now expressed in value terms, profit depends on the "proportion of the annual labour of the country... directed to the support of the labourers". The fall in profit, as margin of cultivation increases, can be explained through increase in wages relative to other products, i.e., increase in the value of the means of subsistence. From this viewpoint he explained that exchange ratios between different commodities depend not on the more or less "compensation which is paid" for the labour required to produce them, but on the "relative quantity of labour which is necessary for its production".

Clearly, it stands against Smith's theory where price of a commodity is explained in terms of an 'adding-up theorem' - adding up of wages, profits and rent. Ricardo breaks away from this and his theory is more like a 'deduction theorem' where surplus is expressed as the 'leavings of wages'. Total surplus product, profits and rent taken together, represent creation of value. Rent, however, is expressed as not a "creation of new revenues, but always a part of revenue already created", i.e., a portion of the profits obtained. Thus, Ricardo successfully resolved the matter of the confusion which Smith was not able to clear regarding the value of any commodity. But in doing so he assumed away the objective fact of the existence of absolute rent. It was bound to be the logical outcome of his theory of value, in which 'prices of production' were identical to the values of the respective commodities, and in which only a notion of differential rent could be accommodated. Any inclusion of absolute rent in the prices of agricultural commodities would imply that if agricultural commodities are exchanged against manufactured goods at their prices of production, this would involve an unequal exchange of labour embodied, that is an exchange between unequal values destroying his theory of value.

Again while he talks of profits, as mentioned earlier, he actually talks of surplus value. As far as the rate of surplus value is concerned, it is variable capital, to

[55] Dobb, op. cit., p. 71.

use the term used by Marx to denote that part of capital which is advanced as wages, which is the determining factor as it determines the number of labourers or the quantity of labour power which could be bought with that capital at historically determined wages. Ricardo, however, persistently used the term profit and rate of profit to explain what actually are surplus value and the rate of surplus value. It was Marx who rectified this mistake and drew attention towards the factor which was responsible for the determination of the rate of profit as against the rate of surplus value. The organic composition of capital - division of total capital into constant and variable capitals - was crucial for this distinction. In contrast to the determination of the rate of surplus value, the rate of profit, Marx says, is determined by the total capital involved in the labour process. Ricardo, in the later years of his life, did recognise this problem and was close to identifying the fact that the composition of capital, which he talks of sometimes in terms of fixed and circulating capital, was important in determining the prices of commodities. His earlier theories implicitly assumed a uniform composition of capital in all lines of production. With this identification of the "second cause" to the law of value he admitted that prices of commodities with equal amount of labour directly expended may vary with varying composition of capital. It was Marx who developed this idea in his critique of the political economy in which not only this factor was taken into account, but the existence of absolute ground rent was also accommodated in the theory of value, and it was shown that due to existence of the absolute ground rent, prices of production vary systematically with the values - this systematic variation explained through variation in organic composition of capital. Also rectified were the wrong notions of fixed and circulating capital in explaining the creation of surplus value and correct notions of constant and variable capital were used to explain the same.

The notion of 'surplus-value' as a separate category was first used by Marx to explain the dynamics of a capitalist society. Two very important points must be made here. First, Marx broke away from the tradition of explaining historical development *as starting from abstract being* as *mind* or *spirit* and brought to the fore the materialist conception of historical development as starting from Nature and from Man as an integral part of Nature. [56] Secondly, he firmly carried forward the idea that surplus can only be created in the labour process, i.e., the origin of surplus lies in the sphere

[56] Which is the Hegalian conception of dialectics as a structural pattern of development.

of production, no mass of transactions can create new value, and consequently, surplus value. His emphasis on the labour process as the source of surplus value has an implicit condition for the existence of surplus value as a category. One can ask the question that why one should consider labour as a measure of value. As correctly pointed out by Smith, labour is the real measure of value. Smith, however, got confused between the two alternative measures of value-labour embodied and labour commanded. Ricardo, by denying any impact of accumulation of stock and private ownership of land on his theory of value maintained that it is only the labour necessary to produce a commodity which still remains the measure of value. In this sense, he abstracted from the social conditions of production. Marx, however, taking into account the historical datum - the bourgeois production relations - made labour the focus of his analysis. The forerunners of Marx, after Ricardo, found themselves unable to reconcile the existence of surplus value with free competition in the realm of labour theory of value where everything exchanged at its value. The strongest case for the existence of surplus value will be the one where it can be shown to exist in a situation where commodities are exchanged at their values.

> "To explain the general nature of profits, you must start from the theorem that, on an average, commodities are sold at their real values, and that profits are derived from selling them at their values.... If you cannot explain profit upon this supposition, you can not explain it at all".[57]

The existence of surplus-value, therefore, must be explained within the premise of the rule of value. Secondly, the existence of surplus value, if established, must be measured in terms of something. But at the same time we know that the production of surplus-value is independent of the sphere of circulation, i.e., its creation does not presuppose existence of exchange values which are, in fact, formed later. This is the hidden condition that there should be some category to explain as well as express the production of surplus value. This could be expressed in terms of a product, as corn did in Ricardian theory of profit, or alternatively, some 'standard commodity'[58] could do the purpose. But for the immediate purpose Marx took, as Ricardo did, the quantities of labour to express it, and more generally as exploitation ratio. He, thus, put labour values in the centre place to address both questions, the later one being evident from this implicit condition.

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[57] Marx,(1899), *Value, Price and Profit*, pp. 53-54.
[58] Of Sraffa type as he has explained in his *Production of Commodities by Means of Commodities.*

Reconciling the existence of surplus value with "free competition" well within the rule of value, Marx discovered the mistake of the classical economists in their confusing labour with labour-power. Taking cognisance of concrete historical datum reflected in labour power becoming a commodity which is the *differentia specifica* of capitalism, he could explain the existence of surplus value in the labour process as a difference between value of the produce of the labour process and the value of labour-power as a commodity. Marx defines labour-power as:

> "...the aggregate of those mental and physical capabilities existing in a human being which he exercises whenever he produces a use-value of any description".[59]

Value of labour power, he says:

> "... is determined, as in the case of every other commodity, by the labour time necessary for the production and consequently also the reproduction of this social article... Given the individual, the production of labour power consists in his reproduction of himself or his maintenance. For his reproduction of himself or his maintenance he requires a given quantity of the means of subsistence. Therefore the labour time requisite for the production of labour power reduces itself to that necessary for the production of those means of subsistence; in other words, the value of labour power is the value of the means of subsistence necessary for the maintenance of the labourer".[60]

The value of labour power thus reduces itself to the value of a more or less definite quantity of ordinary commodities. The historical nature of it, however, must be recognised, as Marx further explains:

> "His (labourer's) natural wants...vary according to the climatic and other physical conditions...the number and extent of his so-called necessary wants...are themselves the product of historical development and depend, therefore, to a great extent on the degree of civilization of a country".[61]

Surplus value, therefore, can be explained in more general terms as a difference between total labour time (length of the working day) and necessary labour time. In the circuit of capital M-C- M¢ the surplus value can be expressed as difference between M¢ and M, which is a positive quantity if we assume the existence of capitalist relations. This quantitative expansion, from M to M¢ of exchange value denotes the surplus creation, but it should not be mistaken that it is created in the sphere of circulation, for in M - C exchange, no value creation takes place, but with C at the command and with it labourer at work, C expands itself in C¢ which is realised in M¢. The expansion of exchange value bases itself on the expansion of use-value. It will be useful to quote Marx as saying:

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[59] Marx, (1976), *Capital*, vol. I, p. 164.
[60] Ibid., p. 167.
[61] Ibid., p. 168.

> "...the past labour that is embodied in the labour power, and the living labour that it can call into action; the daily cost of maintaining it, and its daily expenditure in work, are two totally different things. The former determines the exchange value of the labour power, the latter is its use-value".[62]

This difference is what the capitalist bears in his mind. Again, as Marx pointed out:

> "What really influenced him was the specific use-value which this commodity (labour-power) possesses of being *a source not only of value, but of more value than it has itself.* This is the special service that the capitalist expects from labour-power, and in this transaction he acts in accordance with the "eternal laws" of the exchange of commodities".[63]

This is apparently analogous to Ricardo's conception of profit, but the crucial difference lies in Marx's recognition of the historical conditions under which exchanges between commodities take place, including labour power. While Smith could not resolve it, Ricardo assumed it away. Marx, by pointing out the difference between labour and labour-power, successfully resolved it and well within its premise explained the origin of surplus value.

Marx, to explain production and reproduction of values, used a specific framework in which total value produced could be broken down into three parts. The first part replaces constant capital, all means of production including raw materials and equipment. The second part replaces the value of labour power i.e., value of wages advanced to labourers. The third part remaining is the surplus produce (value) produced by the labourers over and above the value of their means of subsistence. If these three are expressed as C, V and S respectively, then,

$$\text{Total value} = C + V + S.$$

This is the formula on which his whole analysis rests.

After explaining the decomposition of the total value and the origin of surplus value, he introduces an important ratio - the rate of surplus value (resembling Ricardo's rate of profit) as a ratio of surplus value to variable capital, and denotes it by s':

$$s = \frac{S}{V} = \text{rate of surplus value.}$$

This shows the degree of exploitation in capitalist production relations, for it is equivalent to the ratio of surplus labour time to necessary labour time (with labour-power sold at its exchange value). Thus, alternatively it could be expressed as:

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[62] Ibid., p. 188.
[63] Ibid., p. 188.

$$s = \frac{\text{surplus labour}}{\text{necessary labour}}$$

Both these expressions are different ways to express the same quantity, namely the degree of exploitation of labour-power by capital. In the first case, it is expressed in terms of materialised, incorporated labour, while in the second, it is living labour which is used. The latter concept, expressed in terms of labour power, denoted as rate of exploitation, is a more general expression applicable to all class-divided societies, whereas, the former, expressed in value terms, is one special case as appearing in capitalism where commodity economy is fairly well developed.

As is evident from the formula, the rate of surplus value, s', directly depends on (i) the length of the working day, (ii) the quantity of commodities entering into the real wage, and (iii) the productivity of labour. Increase in surplus value resulting from lengthening of the working day is known as *absolute surplus value*, which played key role in the early phase of capitalist development. Any increase resulting either from lowering of real wages or from increasing productivity raises *relative surplus value* which grows in significance with the deepening and maturing of capitalist relations.

Organic composition of capital, denoted by q, is another key ratio in Marx's analytical framework. Capturing the relationship between constant and variable capital, as distinct from fixed and circulating capital which are the categories used to explain the circulation process, it is expressed as a ratio of constant capital to total capital. Thus, organic composition of capital

$$q = \frac{C}{C+V}$$

Here, determination of the organic composition of capital depends on "a variety of causal influences" on the determining factors which themselves are influenced by "the rate of real wages, the productivity of labour, the prevailing level of technique, and the extent of capital accumulation in the past".[64]

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[64] Sweezy(1991), *Theory of Capitalist Development*, p. 66.

Correcting Ricardo, Marx stated that the rate of profit should be calculated in relation to total capital outlays, and not only on the variable part of it. To simplify the theoretical exposition and to bring conformity between the rate of profit formula and the usual concept of annual rate of profit, he assumes that the turnover period of all capital is identical.[65] Denoting it by p,

$$p = \frac{S}{C+V} = \frac{SV}{V(C+V)} = \frac{SC + SV - SC}{V(C+V)}$$

$$= \frac{S(C+V) - SC}{V(C+V)} = \frac{S}{V} - \frac{SC}{V(C+V)} = \frac{S}{V} - \frac{S}{V} \cdot \frac{C}{C+V}$$

Therefore,

$$p = s - sq = s(1-q)$$

Thus, theoretically, the rate of profit depends on two other important notions - the rate of surplus value and the organic composition of capital.

Two important things have to be noted here. First, Marx assumed, for the sake of simplicity, that the rate of surplus value is same everywhere which requires that the labour force be homogeneous and mobile and no producer operates with exceptionally high or low level of technique. Similarly the rate of profit is also said to be the same across industries. Now, if both $s¢$ and p are the same everywhere, and if exchange between commodities takes place in accordance with the law of value, then it follows that q, the organic composition of capital, must be equal everywhere, which cannot be accepted at any rate. Secondly, so far rent has not been considered. If rent as a definite form of surplus value is considered is accepted, i.e., the existence of absolute ground rent confronting the capitalists, then the problem will arise as in Ricardo's theory of value when he tried to explain the rule of value as determining the exchange relations. If the labour theory of value claims itself to be logically correct, then it has to address the two problems stated above.

The rate of surplus value and the general rate of profit in any economy depend on the historical conditions of class-struggle since this determines the level of real wages, the length of the working-day and the productivity of labour. After this distribution of the net social product into necessary and surplus labour (value), the

[65] In vol. II of *Capital* he considers varying turnover periods.

individual rates of profit in different lines of production and for individual capitalists in different industries is determined by the tendency for the equalisation of the rate of profit and consequent behaviour of capital. But if the organic composition of capital, $C/C+V$, differs across industries and across firms, then the same total capital $(C+V)$ generating a similar rate of profit $(S/C+V)$ will give rise to different rates of surplus value (S/V), given by the relationship

$$s = \frac{p}{(1-q)}$$

With a higher magnitude of q, i.e., the organic composition of capital, the rate of surplus value will be higher and vice-versa. But what matters most is the size of the surplus value, and with a higher magnitude of the organic composition of capital the same total capital generates lower surplus value and vice-versa. This implies that

> "...this process of equalization of individual rates of profit to the general rate necessarily implies that prices of production must deviate systematically from values. Branches of production with a lower than average organic composition (such as crop production) generate more surplus value on a given total capital compared to branches of production with a higher than average organic composition, so prices of production must be below value in the first case while prices of production must be above value in the second case, in order that the tendency for equalization of the rate of profit be operative".[66]

Similarly, if private property in land confronts capital then the part of surplus-value appropriated by it will be determined historically. The moment we admit the existence of absolute ground rent, the tendency of equalisation of individual rates of profit implies that the rate of profit in cases where the capitalist parts with a portion of surplus value to the landlord, will not be equalised with the general rate of profit, but will be higher so as to accommodate a positive rate of rent. Thus for such a capitalist a surplus profit in the form of rent will have to be produced. This also implies the same as regarding deviation of prices of production from values:

> "...while the price of production in agriculture is lower than the value, the price at which agricultural products exchange is higher than the prices of production, and becomes equal to value in the limiting case".[67]

Thus, Marx was able to address these problem by explaining the systematic variation of prices of production from values of respective commodities so as to point

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[66] Utsa Patnaik, (1983), 'Classical Theories of Rent and its Application to India: Some Preliminary Propositions, With Some Thoughts on Sharecropping' in *Journal of Peasant Studies*, vol. 10, no. 2 & 3, p. 74-75.

[67] Ibid., p.75.

out the correctness of the labour values as the rule of exchange as advocated by him and its compatibility with differing organic composition and existence of absolute ground rent. After this the accommodation of differential rent and interest as other specific forms of value poses no serious problems and can be explained with the same consistency within the labour theory of value.

So far, the concept of surplus product has been examined in such a way as to throw some light on its evolution in economic theory, starting from the Physiocrats, through the English Classical School upto Marx's theorising of value and surplus value, with the focus on the concept of surplus retained, skipping some other, however, important, issues involved. The approach of the classical political economy proved to be very fruitful given its comprehensive analysis incorporating generation, appropriation and utilisation of surplus as compared to later-day economic theories, emphasising the "efficiency" in resource utilisation. Economists belonging to the former school of thought with their pre-occupation with the requirements of "growth" or increase in national wealth, tried to put the concept of surplus to use in an effective way so as to answer the challenges posed by the economic requirements of growth. Marx's contribution in this regard remains unmatched even today, and his use of surplus as a category to explain intrinsic movements of contemporary societies, and thus to understand the causes of development or underdevelopment, remains one of the most influential theories in this regard. Based on his notion of surplus-value, many other concepts were developed later on by many economists, but only to signify the theoretical maturity and comprehensiveness of his. The most notable contribution in this regard remains that of Paul Baran. In order to illuminate the obstacles to development he made economic surplus the centre of his analysis and tried to explain the factors of development or underdevelopment through the dynamic of surplus generation and utilisation. For this purpose he developed alternative concepts of economic surplus in his outstanding work *The Political Economy of Growth*. Our immediate concern, therefore, is to examine these alternative concepts developed by him. Comparing these with conventional national-income accounting variables of a similar nature reveals that the concept of economic surplus developed in this ways proves to be much better than its counterpart in national income accounting framework of the conventional type.

Baran, first postulates a concept of *actual economic surplus* defined as:

> "...the difference between society's *actual current* output and its actual *current consumption*"[68]

which is identical with "current saving" or accumulation. This concept can clearly be spelt out in national income terminology, where

Actual economic surplus = $S = Y–C = I$,

where Y = national income, C = national consumption and I = national investment (all actual).

It should be noted here that this actual economic surplus is different from what Marx postulated as surplus value. Baran's actual economic surplus merely represents that part of surplus value which is accumulated by the surplus appropriating class(es) or agencies.

Baran, then, presents his second notion of economic surplus as *potential economic surplus* which is defined as:

> "...the difference between the output that could be produced in a given natural and technological environment with the help of employable productive resources, and what might be regarded as essential consumption".[69]

This potential economic surplus

> "... appears under four headings. One is society's excess consumption (predominantly on the part of upper income groups, but in some countries such as the United States also on the part of the so-called middle classes), the second is the output lost to society through the existence of unproductive workers, the third is the output lost because of the irrational and wasteful organization of the existing productive apparatus, and the fourth is the output foregone owing to the existence of unemployment caused primarily by the anarchy of capitalist production and the deficiency of effective demand".[70]

By definition it becomes very clear that the notion of *potential* economic surplus is not applicable as it is to the existing realities. As Baran admits, "its realization presupposes a more or less drastic reorganization of the production and distribution of social output", transcending "the horizon of the existing social order". But before looking into that a technical presentation, or rather clarification, seems to be useful. Lippit, in a recent work on the notion of surplus, has clarified Baran's concepts.[71] Following his terminology it can be said that:

Potential surplus *(PS)* = Potential income *(PY)*–C_{ess}

where C_{ess} = essential consumption.

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[68] Baran, (1957), *The Political Economy of Growth*, p. 132.
[69] Ibid., p. 133.
[70] Ibid., p. 134.
[71] Lippit, V.D. (1996), 'The Concept of the Surplus in Economic Development', in Lippit (ed.) *Radical Political Economy: Explorations in Alternative Economic Analysis.*

whereas, actual Surplus $(AS) = Y–C$.

Therefore,

$$PS–AS = (PY–Y)+(C–C_{ess})$$

Thus, potential surplus exceeds actual surplus by the difference between potential and actual income plus the difference between consumption (actual) and essential consumption.

Baran's potential surplus is expressed as

$$PS = PY–C_{ess}$$

$$PS = Y+f+g+h–C_{ess}$$

where, f = output lost due to unproductive labour,

g = output lost due to irrational and wasteful organisation, and

h = output lost due to unemployment resulting from the anarchy of capitalist production.

Now,

$$Y = C+I$$

$$= C_{ess}+C_{non}+I$$

where C_{non} = non-essential consumption

Thus,

$$PS = Y+f+g+h–C_{ess}$$

$$= C_{ess}+C_{non}+f+g+h–C_{ess}+I$$

$$= I+f+g+h+C_{non}$$

Thus potential surplus includes output lost due to the last three reason *(f, g, h)* and society's non-essential (excess) consumption in addition to current accumulation which Baran overlooks while spelling out the constituents of potential surplus.

There are some other points also where some clarification is needed. As regarding luxury consumption on the part of private households or non-essential consumption by the government, there is a chance to double count the same under two heads - once under non-essential consumption and again under *f*, i.e., output lost due to unproductive labourers. Furthermore, treatment of labourers engaged in health, education, etc. and other services require clarification. These labourers do not produce surplus value, but are supported out of it. Thus their income is a part of surplus value, but their output is not; calculation of surplus, therefore, from two different methods, income method and output method, will result in different figures.

Moreover, the analytical difference between productive and unproductive workers should be borne in mind and this distinction should not be confused with (i) distinction based on material characteristics of the product or the content of labour, and (ii) distinction based on necessity or social usefulness of actual content of labour.

Lippit, while recognising the relevance of this concept of economic surplus for many other reasons, categorically denies much relevance of potential economic surplus as postulated by Baran as a tool in development analysis. The concept of potential surplus, involving a measure of potential income becomes almost impossible to be applied to the ground realities of the underdeveloped countries. Measurement of *f* and *g* becomes impossible given widespread underemployment and disguised unemployment and structural constraints on potential use of this underemployed or unemployed productive capacity[72]. Moreover, realisation of potential surplus is possible only in a "more rationally ordered society" as admitted by Baran, but even in that "more rationally ordered society" systemic constraints will prohibit full realisation of potential surplus then available. Furthermore, the relevance of any concept to development analysis incorporating an understanding of actually existing realities and activities demands a concept of surplus which avoids moving "the analysis to some ideal socialist economy, with no systemic restraint on its productive potential" and, therefore, potential surplus "cannot be made a core concept in the analysis of economic development and underdevelopment".[73]

Baran, then, goes on to define planned economic surplus, which is "relevant only to comprehensive economic planning under socialism", as:

> "...the difference between society's 'optimum' output attainable in a historically given natural and technological environment under conditions of planned 'optimal' utilization of all available productive resources, and some chosen "optimal" volume of consumption".[74]

This concept should not detain us here any longer given its specific relevance to a centrally planned economy.

Later on the forwards another concept of surplus as the *largest possible surplus*. He defines it as

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[72] Utsa Patnaik has shown an elementary method to capture the extent of disguised unemployment in agriculture in 'Alternative Strategies to Agrarian Change in Relation to Resources for Development in India and China', in Deepak Nayyar (ed.) *Economics as Ideology and Experience*, pp. 239-241. However, the problems outlined by Lippit remain unaffected.

[73] Lippit, op. cit., p. 273.

[74] Baran,op.cit., p. 155.

> "...the difference between full employment output and some physiological subsistence minimum level of mass consumption".[75]

But it is very clear that this "largest possible surplus" is not in fact the largest and potential surplus may well oversize it.

In a reply to Nicholas Kaldor, who reviewed the concepts as proposed by Baran, accusing him of confusing the surplus with statistically observable profits, Baran[76] put forward another concept of economic surplus as composing "profits, rent, interest and the rising share of output going to sustain unproductive workers in advertising, public relations, administration, the legal profession, and so forth".[77] The increasing productivity of the *necessary productive workers* and the share of national income accruing to them as wages, according to their relation affect the sustenance of unproductive workers and, consequently, influence the size of the surplus. Two corrections, according to Lippit, are needed in this conception - (i) the essential consumption out of profits, rent and interest income, i.e., out of property incomes and essential consumption of unproductive workers are included in this notion, which should not be the case as far as one is looking for funds potentially available for economic development, and (ii) it excludes the entire income of the necessary productive labour. If these workers are earning quasi-rent, which permits a consumption level exceeding what is a culturally determined subsistence level, then that excess part should be included in the concept of surplus. Finally, there may be a substantial portion of the population, working, yet not being able to achieve the 'necessary consumption' level; so in order to have an idea of the surplus which will be available for the task of economic development necessary adjustments will have to be made in the form of a deduction from the surplus that amount which is required to push their consumption level upto the necessary minimum level.

On the basis of the above mentioned observations on and criticism of - criticism in a particular sense where the applicability of economic surplus as a total of development analysis is concerned without obscuring its analytical significance - Baran's notions of economic surplus, lippit advances his own conception of economic surplus, which is based on Baran's conception of potential surplus, but is of little more relevance for two reasons. First in contrast to Baran's conception of potential

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[75] Baran, (1968), p. 60, cf., Lippit, op. cit. p. 273.
[76] Baran in 1962 printing of *The Political Economy of Growth*, foreword, cf., Lippit, op. cit., p. 273.
[77] Lippit, op. cit., pp. 273-74.

income, it is free from any problem of measurement of potential income, i.e., measurement of *f*, *g* and *h*. As he mentions:

> "...distinguishing between potential and actual output introduces an element of considerable conjecture in the calculation and as I have argued, one that is of dubious validity in UDCs."[78]

Secondly, Baran's emphasis on non-essential extra consumption can still be accommodated here without any notion of potential income. Essential consumption for him, as for Baran also, is not a biologically determined minimum, but historically and culturally determined level of consumption. Lippit, in addition to this, suggests one important modification arising out of "the most important distinction...between the differing subsistence requirements in urban and rural areas."[79]

On the basis of these two qualifications, Lippit puts forward his own concept as:

> "The most straightforward and useful conception of the surplus, therefore, is simply the difference between actual national income (Y) and essential consumption."[80]

He, furthermore, proves the consistency of his concept of economic surplus by calculating it by either methods, income or output. In his framework it can be presented as:

Surplus = $Y-C_{ess}$

Alternatively,

Surplus = Profit *(P)* + Rent *(R)* + Interest *(I)* + that part of labour income which supports non-essential consumption (L_{non}) – essential consumption of unearned income (property income) recipients (H_{ess}) – the labour income deficit (L_d)

where L_d = amount of material resources required to push up consumption level of masses consuming below essential consumption level.

Incorporating the first approach, in the second we have

$$Y-C_{ess} = P+R+I+L_{non}-H_{ess}-L_d$$

But

$$C_{ess} = H_{ess}+L_{ess}$$

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[78] Ibid., p. 276.
[79] Ibid., p. 277.
[80] Ibid., p. 276.

where L_{ess} = that part of labour income which supports essential consumption plus labour income deficit

Thus, $L_{ess} = l_{ess}+L_d$

It makes

$$C_{ess} = H_{ess}+l_{ess}+L_d$$

Substituting, we have

$$Y-H_{ess}-l_{ess}-L_d = P+R+I+L_{non}-H_{ess}-L_d$$

or, $Y = P+R+I+L_{non}+l_{ess}$

or, $Y = P+R+I+L$

where L = total labour income = $L_{non}+l_{ess}$.

The last statement is actually the national income identity, which proves the compatibility of his concept of surplus with the two approaches - income approach (adding together of factor incomes) or output approach to the surplus. Thus one can calculate surplus either by subtracting essential consumption from national income, or by adding together the factor shares of national income, subject to the adjustments noted above (regarding C_{ess}).

Two more concepts of economic surplus can be examined further. One of these two has been given by Baran and Sweezy in *Monopoly Capital* as:

> "...the difference between what a society produces and the cost of producing it."[81]

The deduction, as cost of production, from the national income appears quite ambiguous here, and it "reduces essentially to the wages of productive workers" and, thus "the subsistence requirements of the unproductive workers and the property-share recipients are included in the surplus, while the "monopoly" component in wages and salary incomes [quasi-rent earnings] is excluded", and, therefore, "this treatment is unsatisfactory."[82]

Ron Stanfield, criticising this concept of surplus as given by Baran and Sweezy as an inconsistent one with his (Baran's) other concepts, points out that Baran earlier grouped essential public as well as private consumption together and excluded

[81] Baran and Sweezy, (1966), *Monopoly Capital,* p. 9, cf., Lippit, op. cit., p. 279.

[82] Lippit, ibid., p. 279.

it from the surplus, while the latter version in *Monopoly Capital* treats all government's expenditure as a part of surplus, which is quite unsatisfactory. Stanfield gives an alternative concept of surplus as

> " ...the difference between potential output and essential consumption, where potential output is treated as full employment (of material resources as well as of people) output and essential consumption is 'that consumption necessary to reproduce the extant productive capacity'."[83]

Now, apart from the ambiguity involved in his notion of essential consumption, the notion of full employment output, Lippit says, is of little relevance to the UDCs. Sticking to the actual income remains "a far move satisfactory benchmark than potential income in calculating the surplus."[84]

As we have earlier pointed out, economic surplus is a different concept from marketable surplus and the two will coincide only in the unlikely case where all costs of production, including necessary consumption of workers, are met in kind out of the output, so that what remains for sale is exactly equal to the economic surplus. Although this situation is implicitly assumed by many, it is quite unrealistic because only the most primitive communities will have no monetisation of inputs or of necessary consumption. It has been observed that even during the Mughal period in India there was a fairly substantial degree of monetisation which has only increased over time. Marketable surplus can be defined as that part of the total produce which is exchanged for money. Thus it is the gross produce net of kind requirements of the producers. Utsa Patnaik defines it as

> "...the gross surplus generated within the agricultural sector"[85]

and is equivalent to

> "...(T)he output left after all these (kind) requirements are provided for."[86]

Apart from being unlikely to coincide with economic surplus, marketable surplus is a category used for completely different analytical purposes. Analytical significance of these two lies in different spheres of economic analysis. It is, therefore, not correct to compare one with another as a tool in the same analytical exercise. Marketable surplus, defined as *a part of output*, net of kind retentions of all

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[83] Ron Stanfield (1974), 'A Review of the Economic Surplus concept', in *Review of Radical Political Economics* cf. Lippit, p. 280.
[84] Lippit, op. cit., p. 280.
[85] Patnaik, Utsa (1975), 'Contribution to the Output and Marketable Surplus' in *Economic and Political Weekly*, vol. X, no. 52, p. A-91.
[86] Ibid, p. 91.

kinds, hardly qualifies to be called *surplus* at all in a strict sense as it has nothing to do with cost of production of output. This point can be clarified clearly in the following manner.

Suppose the total output *(X)* be divided into two parts - one sold for cash (X_c), and another retained in kind for whatsoever reason *($\hat{X}$)*. The cash revenue received against sale of X_c will be used to finance the purchase from the market of different inputs (C_c); articles of necessary consumption *(L_c)* and the rest will be held as surplus in cash *(S_c)*. This can thus, be expressed as

$$X_c = C_c+L_c+S_c$$

The retained portion of the output *($\hat{X}$)* will be used for the purpose of meeting input requirements in kind *($\hat{C}$)*, necessary consumption out of the total produce *($\hat{L}$)*, which includes wage-payments in kind and retained part of the output of family-farms for consumption purposes, and the rest for consumption purposes, and the rest will be held as surplus in kind ($\hat{S}$). This can also be expressed as:

$$\hat{X} = \hat{C}+\hat{L}+\hat{S}$$

Total output $X = X_c+\hat{X}$

or, $X = C_c+L_c+S_c+\hat{C}+\hat{L}+\hat{S}$

$= (C_c+\hat{C})+(L_c+\hat{L})+(S_c+\hat{S})$

$= C+L+S$

where, C = total input cost whether in cash or in kind.

L = total labour cost

S = total surplus

Economic surplus, will be total output net of total production cost, or

$S = X-(C+L)$

$= X_c+\hat{X}-(C_c+\hat{C})-(L_c+\hat{L})$

$= C_c+L_c+S_c+\hat{C}+\hat{L}+\hat{S}-C_c-\hat{C}-L-\hat{L}$

$= S_c+\hat{S}$

Thus, it is the total surplus held, whether in cash or in kind. Marketable surplus, by definition, is only that part of output which is sold for cash, i.e., X_c only. Thus marketable surplus (MS) will be

$$MS = X_c = C_c+L_c+S_c$$

Comparing this with economic surplus, which is expressed as

$$S = S_c + \hat{S}$$

We find that it is only when $\hat{S}$ equals C_c plus L_c, i.e., surplus held in kind happens to be equal to cash purchases of all inputs and articles of necessary consumption, economic surplus becomes equal to and marketable surplus. However, there is no reason, at all, for this to happen. This represents merely a theoretical possibility never to be realised in the real world.

To clarify this point further, we can think of two theoretical extremes. In the first case, we can consider zero economic surplus with total output being marketable surplus. This will happen in a situation where all of the produce is sold in the market for cash, with nil retention, and the cash obtained is utilised in the purchase of different inputs and articles of necessary consumption, and which is just sufficient to meet these costs of production. Here one finds that all inputs and articles of consumption are purchased from the market, i.e., hundred percent monetisation of inputs is witnessed. As against this, we can imagine another theoretical extreme where there is zero marketable surplus with huge economic surplus. All material input requirements are met out of the output itself, out of the produce of the agricultural sector. All necessary transactions are within the sector without mediation through cash transaction, i.e., involving only barter exchange. Articles of necessary consumption are also provided by the agricultural output itself. Output is substantially higher than these kind requirements to generate a large economic surplus. This surplus will be held in kind, which can be used either for further exploitation of peasants by advancing kind loans to be repaid in kind only, or for productive accumulation, e.g., by advancing kind wages to labourers employed for land improvement, water management, etc.

We can now proceed to explain the concept of marketable surplus. It can be expressed, as has been done earlier, as

$$\begin{aligned} MS &= X_c = X - \hat{X} \\ &= X - [\hat{C} + \hat{L} + \hat{S}] \end{aligned}$$

If we express $\hat{L}$ as

$$\hat{L} = \hat{W} + \hat{F}$$

where, $\hat{W}$ = retained part of the wages obtained in kind

$\hat{F}$ = retained part of output (in kind) of family-labour farms

and $\hat{S}$ as

$$\hat{S} = \hat{P}+\hat{R}+\hat{I}$$

where $\hat{P}$ = part of profit retained in kind

$\hat{R}$ = rent received in kind retained by the landlords

$\hat{I}$ = interest received in kind retained by the money lender

then marketable surplus can be written as:

$$MS = X_c = X-\hat{C}-(\hat{W}+\hat{F})-(\hat{P}+\hat{R}+\hat{I})$$

One distinction needs to be made, after having an idea of the marketable surplus. Actually marketed surplus may vary from marketable surplus which is simply a part of the total produce available for selling, i.e., for exchanging it with money. The first thing which should be noted in this regard is that barter exchange within the rural economy is excluded from our analysis since this part of the total produce is not exchanged for money, hence it lies out of the market (monetised exchange).

Secondly, as has been defined earlier, the retained portion of the surplus product by the surplus appropriating classes for their consumption needs is deducted. If P^*, R^* and I^* are the profits, rent and interest received in kind, then

$$P^*-\hat{P} = P_s,$$

$$R^*-\hat{R} = R_s,$$

and $$I^*-\hat{I} = I_s,$$

will be the amount available for selling or for accumulation. Now, if these surplus appropriating classes decide to hoard or dishoard a part of P_s, R_s and I_s, then the actual marketed surplus will be less or more than marketable surplus. This can be shown alternatively. Marketable surplus is expressed as,

$$MS = X-[\hat{C}+\hat{W}+\hat{F}+\hat{P}+\hat{R}+\hat{I}]$$

$$= X-\hat{C}-[\hat{W}+\hat{F}+\hat{P}+\hat{R}+\hat{I}]$$

$$= X-\hat{C}-[(W^*-W_s)+(F^*-F_s)+(P^*-P_s)+(R^*-R_s)+(I^*-I_s)]$$

where W^* and F^* represent total wage-income and family-labour income received in kind and W_s and L_s and the parts of respective income received in kind which are available for selling, i.e.,

$$Ws = W^* - \hat{W}$$

and $$Fs = F^* - \hat{F}$$

Now, marketable surplus can be written as

$$MS = X - \hat{C} - [(W^* + F^* + P^* + R^* + I^*) - (W_s + F_s + P_s + R_s + I_s)]$$

Thus, we have shown the total retentions by all classes $(\hat{W} + \hat{F} + \hat{P} + \hat{R} + \hat{I})$ as a difference between two terms, $(W^* + F^* + P^* + R^* + I^*)$ and $(W_s + F_s + P_s + R_s + I_s)$; where the latter represents an amount which could be sold in the market. If these rural classes, for some reason, decide to sell a different quantity from what is available for selling out of their receipt in kind, then the actually marketed surplus will be different from marketable surplus. Suppose if different classes decide to sell $\hat{W_s}$, $\hat{F_s}$, $\hat{P_s}$, $\hat{R_s}$ and $\hat{I_s}$ instead of available W_s, F_s, P_s, R_s and I_s, then the actually marketed surplus can be expressed as

$$\hat{MS} = X - \hat{C} - [(W^* + F^* + P^* + R^* + I^*) - (\hat{W_s} + \hat{F_s} + \hat{P_s} + \hat{R_s} + \hat{I_s})]$$

The difference between the two notions will be

$$MS - \hat{MS} = (W_s + F_s + P_s + R_s + I_s) - (\hat{W_s} + \hat{F_s} + \hat{P_s} + \hat{R_s} + \hat{I_s})$$

$$= (W_s - \hat{W_s}) + (F_s - \hat{F_s}) + (P_s - \hat{P_s}) + (R_s - \hat{R_s}) + (I_s - \hat{I_s})$$

Accumulation or decumulation of stock by any of the classes in the agricultural sector will lead to a situation where actually marketed surplus will be less than or greater than the marketable surplus.[87]

Accumulation of stock may take place for different reasons. For the surplus appropriating classes, retention of surplus in kind may be a source of further exploitation. An example at hand may be that of a landlord or a moneylender (or both fused together) giving kind loans to a marginal or small farmer, in which case the former's marketable surplus exceeds marketed surplus.

One more point needs to be added. It is true for all underdeveloped countries that a part of the surplus produce is appropriated by the traders in the form of trader's commission. This constitutes the surplus product in agriculture and also the marketable surplus. It will be a matter of definition whether to include the

[87] Behaviour of different classes or individuals may be off-setting.

consumption requirements of traders, which may form a long chain, in marketable surplus or not. If interlinkages between different markets are found, like trader - landlord - moneylender interlinkage, then it becomes more obvious to deduct the retained part of the produce appropriated to get marketable surplus.

Agricultural produce which is exchanged for money constitutes marketable surplus. But this exchange may be of two different kinds. Agriculture produce could be sold within the agricultural sector or they could be sold outside it. [88] On the basis of these two kinds of monetised exchanges, we may have two alternative notions of marketable surplus of agricultural produce, which may be used for different analytical purposes. We have expressed marketable surplus as:

$$MS = X\text{-}\hat{C}\text{-}[(W^{*}-W_{s})+(L^{*}-L_{s})+(P^{*}-P_{s})+(R^{*}-R_{s})+(I^{*}-I_{s})]$$

We may have two theoretical possibilities. First, all the agricultural classes sell their produce outside the agricultural sector. Secondly, smaller peasants or wage-labourers may sell their produce or items received as wages in kind to rich landlords, in which case there will be a transfer of marketable surplus from lower income classes to rich farmers and landlords. In this case the flow of marketable surplus from agriculture to other sectors will be smaller if the buyers of such produce decide to hoard a portion of the bought produce. One should note, however, that both of these are marketable surpluses in so far as the marketable surplus is defined as part of total produce exchanged for money, which is true in both these cases. As far as availability of wage-goods and raw materials to the industrial sector is concerned, this will make a difference. This difference, however, is reducible to the retained part of total produce (aggregate) by all classes.

This distinction should not be confused with yet another distinction which has its bearing on development analysis. What has been explained above as marketable surplus can be said to be the *gross marketable surplus,* which will be different from the *net marketable surplus,* taking into account the *net buy-back* by the cultivating households. It is a commonly observed phenomenon in underdeveloped countries that the smaller and marginal peasantry sells, immediately after the harvest, a part of their total produce which is not consistent with their annual requirements. A foodgrain producer who is under different obligations to pay, in cash, rent and interest (or repayment of old loans), is often found to be making "distress sale" to the local trader, or trader-moneylender fused together. The part of total produce retained after meeting these cash obligations, is not sufficient to meet the annual consumption requirement of foodgrains. At a later stage, therefore, he is forced to buy foodgrains, often at higher prices and financed by renewed loans. This buy-back should be

[88] However, not all of the agricultural produce can be sold within the agricultural sector, only a part of it can be, as the agriculturl sector can not be perfectly self-sufficient.

deducted from the *gross marketable surplus* in order to obtain *net marketable surplus*. It should be noted here that buy-back refers only to the same physical produce which is produced by peasants and not to the purchase of other articles of consumption howsoever necessary.

It is evident, therefore, that as far as availability of wage-goods and raw materials to the needs of industrialisation is concerned, the concept of net marketable surplus can be used. Gross marketable surplus may overestimate the potential of agricultural sector in providing wage-goods and raw materials. What is important here is that the net marketable surplus may also overestimate the total growth potential of the agricultural sector, even if it truly captures the former potential, i.e., potential for providing wage-goods and raw materials. For the growth of the agricultural sector itself, the concept of economic surplus is much more relevant than any of the marketable surplus notions. Social conditions of the labour process are such that they can be better captured by concepts of the generation of surplus (product) value than any notion of marketable surplus.

Off late there have been attempts to develop a measure of the agricultural surplus, particularly in respect to the needs and requirements of a successful industrialisation in its early phases. A whole set of economic theories has been postulated to signify this contribution of the agricultural sector. Karshenas, in a wide survey of development literature consisting of agricultural contribution to industrialisation points out that these different theories assume different structural constraints as being binding, and based on these assumptions, economic analysis is carried out and policy prescriptions are suggested.[89] There could be four structural constraints in this regard - saving constraint, marketed surplus constraint, demand constraint and labour constraint. Among these four constraints, and theories based on these constraints, only those based on saving constraint as binding one conclude that a net outflow of agricultural products as well as financial resources from the agricultural sector is necessary. Theories based on labour constraint generally restrict themselves to the requirements of skilled labour force, and not to that of a general shortage of labour force. Others postulate that there may be a net inflow of financial

[89] Karshenas (1994), *Industrialization and Agricultural Surplus*.

resources into the agricultural sector to alleviate the binding constraint in the early phases.

Different variants of the concept of agricultural surplus have been developed in accordance with different theories. All these concepts of surplus are situated in the dynamics of inter-sectoral resource flows. In an attempt to comprehend the historical experiences of different countries a need for a common measure of the agricultural surplus is felt so as to facilitate intertemporal as well as inter-country comparisons. In this direction, the conception of the *social accounting matrix* (SAM) marks a significant effort.[90] The use of the SAM for the purpose of measuring inter-sectoral resource flows considerably eases difficulties involved in statistical exercises.[91] The use of the SAM has not only facilitated a measurement of surplus-transfer, but also a discussion on conceptual distinctions between different concepts of agricultural surplus and their significance. A brief sketch of the SAM as presented by Karshenas, and its use in conceptually distinguishing different concepts of agricultural surplus has been given below.

The SAM methodology as an accounting system consists of a matrix representation of the circular flow of income and expenditure, as in national accounts, combined with the input-output model of the production sector. For a simplified SAM, row and column entries are divided under four heads - activities (production sphere), factors, transactions of institutions on current account, and transactions of institutions on capital account. Institutions are divided into three groups - farm households, government and others. For the sake of simplicity, the production (activity) is divided into two sectors - agricultural and non-agricultural. This SAM is presented in Table 1 below.

Before proceeding further to explain different concepts of surplus, certain conceptual ambiguities involved in the SAM methodology need clarification. The requirement of the accounting consistency demands that the sum total of any row must equal the sum total of the corresponding column. Distinction between

[90] Early discussion on SAM could be found in Ishikawa (1967), Pyatt and Roe (1977), King (1981), cf., Karshenas, op. cit.

[91] Earlier discussion on this issue are in Karshenas (1989), *Intersectoral Resource Flows and Development: Lessons of Past Experience*, and also in Morrison and Thorbeeke (1990), 'The Concept of the Agricultural Surplus' in *World Development*, vol. 15, no. 8, pp.1081-95.

institutions and activities, however, poses a problem of consistency in this regard. As pointed out by Karshenas himself, production takes place within the 'activity' sectors whereas current and capital transactions involve 'activity' sectors as well as different institutions. This results in a situation where "resource flows exhibit diverse and incompatible origins and destinations". In order to make inter-sectoral resource flows a consistent and meaningful measure, redefining of sectors and institutions becomes imp Twenty-two points, plus triple-word-score, plus fifty points for using all my letters. Game's over. I'm outta here.erative to bring a correspondence between the sectors and institutions of interest. Furthermore, defining of sectoral or institutional boundaries has also its influences on the methodological exercise, which itself is influenced by the purpose as well as the theoretical framework of the study. Out of various possible divisions such as farm/non-farm, subsistence/commercial, rural/urban, organised/unorganised, etc., Karshenas uses relatively aggregative agriculture/non-agriculture distinction. The agricultural sector, however, as pointed out before, in order to retain consistency, should be redefined so as to include all farm household activities which may not be classified as agricultural by conventional classifications. As a result, agriculture/ non-agriculture and farm/non-farm surplus transfers are used interchangeably.

The first concept of agricultural surplus, he defines, is in terms of *net finance contribution of agriculture* to accumulation in other sectors. It is defined as "the difference between commodity exports and imports of the agricultural or the farm sector" to the rest of the economy. The same has been called as the *net product contribution* of the agricultural sector by Millar.[92] The net product contribution, thus, can be expressed as:

$$R = X_a - M_a$$

where X_a and M_a are exports and imports respectively, of the agricultural sector. These can be further decomposed as

$$X_a = A_{an} + C_{ag} + C_{ao} + I_{ag} + I_{ao}$$

[92] Miller, J.R. (1970), 'Soviet Rapid Development and the Agricultural Surplus Hypothesis' in *Soviet Studies,* vol. 22, pp. 77-91.

and $M_a = A_{na} + C_{nf} + I_{nf}$

It should be made clear that what is expressed as X_a is the *net exports* of agricultural/farm products and *not the gross exports*. Thus, consumption and investment out of agricultural sector's output by the sector itself is excluded (netted out). We can also write exports of the agricultural sector as:

$X_a = A_{na} + F_a - C_{af} - I_{af}$, given the accounting identity between row 1 and column 1.

Combining this with expression for Ma, we have

$$R = X_a - M_a = F_a - (C_{af} + C_{nf}) - (I_{af} + I_{nf})$$

Thus, net product contribution of the agricultural sector is the value added (F_a) minus total consumption and investment in the farm sector.

We can easily derive its financial counterpart by using accounting identities between different rows and columns. Accounting identity between row 4 and column 4 gives:

$$C_{af} + C_{nf} + T_{gf} + T_{of} + S_f = Y_f + T_{fg} + T_{fo}$$

or, $$C_{af} + C_{nf} = (Y_f - S_f) + (T_{fg} - T_{gf}) + (T_{fo} - T_{of})$$

Similarly, accounting identity between rows 7 and column 7 gives:

$$I_{af} + I_{nf} + K_{gf} + K_{of} = S_f + K_{fg} + K_{fo}$$

or, $$I_{af} + I_{nf} = S_f + (K_{fg} - K_{gf}) + (K_{fo} - K_{of})$$

Substituting these expressions, in the expression for R, we get

$$R = (F_a - Y_f) - (T_{fg} - T_{gf}) - (T_{fo} - T_{of}) - (K_{fg} - K_{gf}) - (K_{fo} - K_{of})$$

where, $F_a - Y_f$ = value added in the farm sector minus factor income of the farm sector (outflow of net factor income mainly in the form of rent, interest, etc.).

$(T_{fg} - T_{gf})$ = net current transfer from the government to the farm sector.

$(T_{fo} - T_{of})$ = net current transfer from others to the farm sectors.

Table 1: SAM for Inter Sectoral Resource Flows

		Activities		Factors	Current account Transactions between Institutions			Capital account Transactions between Institutions		
		Agri.	Non-agri.		farm households	Govt.	Others	farm households	Govt.	Others
Activities	Agri.		A_{an}		C_{af}	C_{ag}	C_{ao}	I_{af}	I_{ag}	I_{ao}
	Non-Agri.	A_{na}			C_{nf}	C_{ng}	C_{no}	I_{nf}	I_{ng}	I_{no}
Factors		F_a	F_n							
Current account Transactions between Institutions	Farm H/Holds			Y_f		T_{fg}	T_{fo}			
	Govt.			Y_g	T_{gf}		T_{go}			
	Others			Y_o	T_{of}	T_{og}				
Capital account Transactions between Institutions	Farm H/Holds				S_f				K_{fg}	K_{fo}
	Govt.					S_g		K_{gf}		K_{go}
	Others						S_o	K_{of}	K_{og}	

where A: production activity, C: Consumption, I: Investment, F: Factor requirement, Y: factor income, T: Current Transfers, S: Savings on current account, K: Capital Transfers.

$(K_{fg}-K_{gf})$ = net capital transfer from the government to the farm sector.

$(K_{fo}-K_{of})$ = net capital transfer from other to the farm sector.

Thus, net financial contribution of the agricultural sector is a net outflow of factor income minus net current and capital transfers into agriculture from the government and other sectors.

If the factor payments and current transfers are combined into one term V and the capital transfers into K, then net financial contribution can be expressed as

$$R = X_a - M_a = V + K.$$

This expression was first used by Ishikawa.[93]

Marketable surplus can also be explained by using the SAM methodology. It can be defined as the total sales of the farm sector to the non-farm sector, which is equal to X_a.

$$\text{i.e.,} \quad X_a = A_{an} + C_{ag} + C_{ao} + I_{ag} + I_{ao} = A_{na} + F_a - C_{af} - I_{af}$$

As pointed out earlier also, this is net of farm sector's own input as well as consumption and investment requirements meted out of agricultural products.

Millar defines net agricultural surplus as the value added in the farm sector minus the consumption of farm households.[94] It can be expressed, following the SAM methodology, as

$$NS_a = F_a - C_f = F_a - (C_{af} + C_{nf})$$

where C_f is the total consumption requirements of the farm households including purchases from agricultural as well as non-agricultural sector.

We earlier had R as

$$R = X_a - M_a = F_a - (C_{af} + C_{nf}) - (I_{af} + I_{nf})$$

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[93] Ishikawa (1967), *Economic Development in Asian Perspective*.
[94] Millar, op. cit.

Substituting NS_a into it,

$$R = X_a - M_a = NS_a - (I_{af} + I_{nf})$$

Therefore,

$$NS_a = (X_a - M_a) + (I_{af} + I_{nf}) = (X_a - M_a) + I_a$$

Difference between the *net agricultural surplus* thus defined, and the *net financial contribution of agriculture*, therefore, comes down to total agricultural investment requirements. Net agricultural surplus, therefore, is equal to the resources made available by the agricultural sector for investment within the sector as well as outside including exports. The financial equivalent to which could be written as:

$$NS_a = (X_a - M_a) + I_a$$

$$= (F_a - Y_f) + S_f - (T_{fg} - T_{gf}) - (T_{fo} - T_{of})$$

It can be expressed, thus, as net outflow of factor income from the farm sector plus savings generated in that sector minus net inflow of current transfers from the government and others into the agricultural sector.

Yet another concept of surplus, as used by Mundle and Okhawa[95] and Mody et al.[96] "saving surplus" is defined as the net financial contribution of agriculture plus the inflow of net factor income and current transfers into the agricultural sector. In the net financial contribution, net factor outflow was included. Thus, if we include net factor inflow, i.e., net factor outflow with a negative sign, then this part will be cancelled out. Similarly, net inflow of current transfers into agriculture from the government and others was deducted. If this part is also included in saving surplus, then this will also be cancelled out, leaving only net capital outflow from agriculture. To make it clearer, net financial contribution was expressed as:

$$R = X_a - M_a = V + K$$

where $Y = (F_a - Y_f) - (T_{fg} - T_{gf}) - (T_{fo} - T_{of})$

[95] Mundle, S. and K. Ohkawa (1979), 'Agricultural Surplus Flow in Japan, 1888-1973' in *The Developing Economies*, vol. 17.

[96] Modi, A., S. Mundle and K. N. Raj, (1985), 'Resources Flows from Japan and India' in K. Ohkawa and G. Ranis (eds.), *Japan and the Developing Countries: A Comparative Analysis.*

and $K = -(H_{fg}-K_{gf})-(K_{fo}-K_{of})$

By definition, V will cancel out while expressing "saving surplus", leaving only K. i.e., saving surplus,

$$AS = X_a-M_a-V = K = -(K_{fg}-K_{gf})-(K_{fo}-K_{of})$$

or, $AS = (K_{gf}-K_{fg})+(K_{of}-K_{fo})$

This is the net capital transfer from the agriculture to the government and others. Using accounting identities, the same could be written as

$$AS = X_a-M_a-V$$

$$= Y_f+(T_{fg}-T_{gf})+(T_{fo}-T_{of})-(C_{af}+C_{nf})-(I_{af}+I_{nf})$$

This is net factor income earned by the farm households plus net current transfers into farm sector from the government and others minus total consumption and investment requirements of the farm sector.

It is apparent that the SAM methodology has some important advantages regarding measurement of agricultural surpluses. The nature of data given in the conventional national income accounts and input-output matrix conform to its methodology, if necessary modification in defining sectoral and institutional sectors are made. Its usefulness is also seen when a decomposed expression of agricultural surplus is presented. These not only tell about the various component parts of surpluses, but also throw light on various possible mechanisms to transfer the surplus to desired destinations. But despite all these advantages, it remains essentially an accounting instrument and, thus, is devoid of any analysis of generation of surplus and its appropriation and accumulation. Karshenas, himself admits this limitation when outlining the advantages of having a distinction between sectors based on organisational forms. Institutional structures within agriculture have its influence on the very process of surplus creation and the various social forms that it takes. These structures have, thus, their impact on the internal dynamic of the agricultural sector as well as on the process of resource transfer. Use of comparative method, as advocated by Karshenas himself, thus remains partial, if not completely abandoned, since any historical analysis of the labour process is lacking.

CHAPTER II

AGRICULTURAL SURPLUS IN INDIA: ESTIMATES FOR THE YEARS 1980-81 TO 1995-96

In this chapter an attempt has been made to estimate the magnitude of agricultural surplus generated in Indian agriculture as a whole, at an aggregate level. Apart from agriculture proper it includes livestock production, forestry and logging, and fisheries. Also, estimates for the rate of return are made. Because of the nature of the data required, estimates of the latter have been made only for agriculture proper and livestock production. These estimates cover a period from 1980-81 to 1995-96. The structural composition of this surplus in its different forms, i.e., rent, interest and profit, has also been presented. The following section is a discussion about relevant concepts. The approach followed in the estimation exercise has also been outlined here. The next section lists the different sources from which data has been taken. Problems of inconsistency are bound to occur to a certain extent when diverse data sources are used. An attempt has been made to do away with this problem as far as possible. The method by which this is sought to be done is explained in the next section. Limitations of the database and, consequently, of the method adopted has also been discussed. Finally, the concept of the rate of return and the method of estimation thereof are discussed. The limitations involved therein have also been stated.

Estimation of Surplus

(I) Concepts and Approach:

The single most important concept in this study is the concept of surplus (in agriculture) itself. It is defined as that part of the total produce which is left with the cultivators and non-cultivating property owning classes at their disposal after making out payments for all material costs of production including consumption of fixed capital and total labour cost which takes into account including imputed value of family labour. This surplus can be used by all cultivators and non-cultivating property owning classes for investment or for financing consumption expenditure of the latter.

In order to come to the figure of surplus, first, total material costs are deducted from the gross value of output of agriculture proper, livestock production, forestry and logging, and fisheries. These material costs include cost of seed, organic manure, chemical fertilisers, feed of livestock, irrigation charges, market charges, electricity, pesticides and insecticides, diesel oil, current repairs, maintenance of fixed assets and other operational costs, and, finally, consumption of fixed capital. Thus net value added (*NVA*) is arrived at as:

NVA = Gross value of output *(X)* – all material costs *(M)*

The next deduction required is that of total labour cost from net value added. Total labour cost includes both – cost of wage labour (L_w) and imputed value of family labour (L_f). If we deduct only cost of wage labour from net value added then it will give that part of gross output which is left with the cultivators after meeting all material costs and paying wages to agricultural labourers, and is used for consumption and the rest is appropriated as surplus. This part is equal to

$$NVA - L_w = X - M - L_w$$

To arrive at the estimates of surplus we further deduct imputed value of family labour, which is arrived at by imputing the average wage income of wage-paid workers to the family workers of cultivating households. Thus

$$\text{Surplus } (S) = NVA - L_w - L_f$$

$$= X - M - L_w - L_f$$

$$= X - (M + L)$$

where total labour cost $(L) = L_w + L_f$

In this form this concept of surplus bears close resemblance with some variants of economic surplus discussed in the first chapter. This is of course not the surplus value of the Marxian theoretical framework, for the simple reason that surplus in the present study is not produced in a wholly capitalist system of the production. A significant part of the total surplus product is produced in a milieu of petty producers using family labour and not wage-labour. With some assumption, however, it is

possible to get an idea of the extent to which a part of the total surplus can be said to be produced by wage labour and appropriated mainly as profit and as capitalist rent. Total surplus in the present study is closer to the 'actual economic surplus' generated in the agricultural sector. Total surplus is the amount which is left after paying for the actual total costs of production including material costs as well as cost of necessary labour required to produce it (with a realistic assumption that the annual wage bill per worker is a good approximation of cost of necessary labour including that of family labour).

This concept of surplus is consistent with the classical political economy framework and can be used for analytical purposes. Surplus could be arrived at by summing up the different forms of surpluses in which it is appropriated. The analytical distinction of the forms could further be utilised to assess the growth potential of Indian agriculture.

(II) Data Base:

Since the task at hand is to prepare a time-series of agricultural surplus at current as well as at constant prices, data on gross output and on all material and labour inputs for different years are required. Annual reports of National Accounts Statistics (NAS) published by the Central Statistical Organisation (CSO) is the obvious choice. However, given the diverse nature of data requirement it is not possible to limit it to annual reports of NAS. Direct references, therefore, to other data sources are made. These include:

1. Census of India (1981) and (1991).
2. Reports on Currency and Finance, Reserve Bank of India.
3. Economic Survey.
4. Agricultural Statistics at a Glance, 1999, Directorate of Economics and Statistics, Department of Agriculture and Cooperation, Ministry of Agriculture.

Use of other data sources has also been made wherever required. Indirect references are extensively made to the following:

1. Cost of Cultivation Studies, published by Commission on Agricultural Costs and Prices, Ministry of Agriculture.
2. National Sample Surveys.
3. All India Debt and Investment Surveys, Reserve Bank of India.

(III) The Method of Estimation:

The estimation exercise involves the following steps:

1. First, the net value added is estimated by deducting all material costs of production including consumption of fixed capital from the gross value of output.

2. Then, total labour cost is estimated. This has been done separately for wage labour and imputed value of family labour.

3. Total labour cost is deducted from the net value added to get the estimates of surplus.

4. Total factor incomes are available in the annual reports of NAS in terms of compensation of employees, operating surplus and mixed income of self-employed. Estimates of property incomes in terms of rent and interest are also available. From the net value added or total factor incomes compensation of employees, rent, interest and imputed value of family labour is deducted to obtain the estimates of profit.

5. Total surplus is arrived at, alternatively, by summing together rent, interest and profit.

III. 1 Estimation of net value added:

III.1.(a): *Value of output*

Annual reports of NAS carry data on gross value of output of agriculture proper, livestock production, forestry and logging, and fisheries, separately. For agriculture proper mainly three data sources are utilised – the Land Use Statistics

(LUS), Area and Out-turn of Principal crops, and the Cost of Cultivation Studies (CCS). For the purpose of evaluation 74 agricultural crops/crop groups including by-products are divided into four broad categories viz. , (i) 45 items of principal crops, (ii) 10 items of minor crops, (iii) 11 items of miscellaneous and unspecified crop groups, and (iv) 8 items of other products and by-products. For evaluation of output of livestock and livestock products, these are divided into seven broad categories – (i) milk, (ii) meat group, (iii) eggs, (iv) wool and hair, (v) dung, (vi) silk worm, cocoons and honey, and (vii) increase in livestock.[1] Main data sources for livestock production are Integrated Sample Survey (ISS) and Indian Livestock Census (ILC).

The value of the output is arrived at by multiplying the physical amount of different items with their respective prices. Given the variability of prices over time, the estimation of value of output becomes difficult. Immediate post harvest prices are very low as compared to off-season prices. The estimation involves an evaluation mechanism that should reflect the prices received by the *producers*. With the fact that not all of the agricultural produce is disposed off immediately after the harvest or at any one point of time in one go, a suitable price index, ideally, should take care of a situation in which different amount of output is being sold at different points of time at different prices. But due to lack of such detailed information about prices over time the evaluation of output is done at "*crop-wise average wholesale prices prevailing in the primary markets during the peak marketing periods*".[2] For some principal crops and most of the minor crops adequate data are not available and alternative methods based on certain assumptions are resorted to. The prices of livestock and livestock products are taken from the same sources with supplements from state agencies wherever possible, and state level arithmetic averages are worked out for this purpose. In the absence of direct data price trends are used to determine the value of output.

Central Statistical Organisation (CSO) has been collecting data on out-turn and prices of forest products directly from the state forest departments. Forest products are categorised into two groups – major forest products and minor forest

[1] A detailed list of items covered under agriculture proper and livestock is given in Appendix 2.1 at the end of the chapter.
[2] Central Statistical Organization, National (1989), *Accounts Statistics – Sources and Methods*, p. 42. Usually there is a time lag of one to two months between the harvest time and the peak marketing period.

products, of which data on the later are unsatisfactory. Even in the case of major forest products, which are further divided into two sub-groups – industrial wood and fuel wood, problems arise due to the fact that a substantial part of total product goes unrecorded. Currently CSO uses a norm by which unrecorded production of industrial wood is put at 10 percent of recorded production and in case of fuel wood it is put at 10 times the recorded production.

For the evaluation of output of these products, prices prevailing at the sale depots are treated as producers' prices, which are adjusted for Trade and Transport Margins (TTMs) if the activities are conducted by private entities. A flat rate of 10 percent of the value of output is taken as TTMs. In case of minor forest products, their economic values are taken as 10 times their royalty values.

In case of fisheries, data on production, prices and disposal of fish are supplied by the State Fisheries Departments. Information in this regard is available under four heads – marine fish, inland fish, subsistence fish, and value of output from gathering of pearls, chanks and other products. In case of marine fish some or other kind of statistical sampling designs are adopted[3], while in case of inland fish estimates are based on market arrivals or on surveys conducted in selected landing centres[4]. On the basis of local inquiries the value of subsistence fish is taken to be 12.5 percent of the value of output of inland fish in all states except Tamil Nadu and Uttar Pradesh where it is found to be 2.5 and 8.7 percent respectively.

Average annual auction prices of marine fish at the landing centres and assembling centre prices are used to evaluate the output of marine and inland fish respectively. These are duly adjusted for TTMs. Subsistence fish output is evaluated at inland fish prices. In case of fish curing, quantities and prices of fish let in and let out and the value of salt used are available on annual basis.

Data on producer prices and value of output from gathering of pearls, chanks and other products are not available. Gross value added from these activities is

[3] Except in Karnataka where complete enumeration method is adopted.
[4] In West Bengal and Assam these are based on consumption data.

derived by multiplying value added per person with the number of persons employed in these activities. Information about value added per person is available for selected states and that in Kerala is taken as the proxy for other states. The number of persons employed is determined by moving census data on working force, using the compound growth rates observed between two points of time.

III.1. (b) *:Inputs (all material costs of production including consumption of fixed capital):*

In agriculture proper and livestock, material inputs include (i) seed, (ii) organic manure, (iii) chemical fertilisers, (iv) livestock feed, (v) irrigation charges, (vi) electricity charges, (vii) market charges, (viii) insecticides and pesticides, (ix) current repairs and maintenance of fixed assets and other operational costs, and (x) diesel oil. NAS annual reports contain data on these inputs that are based mainly on Cost of Cultivation Studies (CCS), which are supplemented by some other sources also.

Cost incurred on seeds are arrived at by adopting a measure of seed rates (quantity per hectare) and respective prices, which are the prices used for evaluation of output of respective crops.[5] Dung is taken as the only organic manure used and it is assumed that the output of dung of animal husbandry is used as input in agriculture. Regarding chemical fertilisers, quantity distributed is assumed to be quantity consumed in a particular year. The prices used for evaluation are the retail prices. Annual data on irrigation charges from the respective state irrigation departments which are collected under the following heads – (i) sale of water for irrigation purpose, (ii) irrigation cess, (iii) local cess on water charges, (iv) betterment levy, and (v) other items.[6] Evaluation of market charges involves an averaging method in which both simple mean (of charges at different centres) and weighted average (for different commodities and states) are used to arrive at a composite ratio of market charges to the value of output for all commodities, which is assumed to be constant over time, subject to periodical revisions. Data on electricity consumption for agricultural

[5] The same method of evaluation of seed, as explained in the previous section, is adopted.
[6] If a state fails to provide this information, budgetary proposals are used which include some other charges, which are not a part of irrigation charges.

purposes are available from the Central Electricity Authority on an annual basis at state level (with prices per unit). Pesticide Association of India makes available data on consumption of pesticides and insecticides in quantitative terms which are evaluated at current prices by using Economic Advisors' index of wholesale prices. Consumption of diesel oil (and also other lubricating oils, etc.) is estimated by multiplying the number of tractors and diesel engines by per unit consumption of diesel oil, norms for which are based on schedules of CCS.

Livestock feed is broadly divided into two categories – roughage and concentrates. For roughage, the entire production of fodder, cane trash and grass, and 95 percent of total production of stalks and straws is considered to be consumed by livestock population.[7] As regards concentrates, a norm of feed rate is used which is based on findings of 30th round of National Sample Surveys (NSS), 1975-76[8], to estimate the value of different components of concentrates for the year 1975-76. For subsequent years, 1975-76 prices are moved with the help of index of prices of relevant agricultural crops. Estimation of cost of poultry feed involves a similar exercise in which a consumption norm is used which is based on some studies/surveys. Total consumption figures are arrived at by multiplying it by the estimated number of poultry (available from Indian Livestock Censuses). The total consumption then, is split into two groups – grains and ready-made food, which are evaluated at prices of value of relevant products and Economic Advisors' wholesale price index respectively.

Fixed assets in agricultural production include (i) agricultural implements, machinery and transport equipment, (ii) farm houses, barns and cattle sheds, (iii) orchards and plantations, (iv) bunding and other land means, (v) wells and (vi) other irrigation resources, etc. All India Debt and Investment Survey (AIDIS) publishes estimates of expenditure on current repairs and maintenance for all these categories of fixed assets for a particular year. The figures at current prices for the preceding and subsequent years are obtained by moving that particular year's figure by the index of

[7] An adjustment is made for consumption of these items by animals which are not used in agriculture.
[8] NSS 30th round, 1975-76. Report no. 281, "*Some Aspects of Production of Livestock Products and Related Characteristics*" and report no. 288, "*A Note on Some Characteristics of Household Dairy Enterprises*".

cost of rural/ urban 'other construction works' in case of all fixed assets except for agricultural equipments and machinery, in which case the relevant figure is moved with the help of value of products and by- products of this group. Operational costs of livestock products are estimated at the rate of 0.25 per cent of corresponding value of output.

In forestry and logging, material inputs include expenditure on transportation, water, electricity, fuel, normal repairs and maintenance of fixed assets. The budgets of the state governments and Union Territories provide information on expenditure on the purchase of goods and services and on repairs and maintenance of fixed assets and also the value of output. On the basis of observations over a number of years, the average ratio of these expenditures to the value of output is found to be around 10 per cent, which is currently being used. The same is also extended for the exploitation of forests by the private sector for which no separate data is available. As regards fisheries, in the absence of reliable and comprehensive detail it is assumed that in the case of marine fish, and inland fish expenditure on operational costs, repairs and maintenance constitutes 10 per cent and 6 per cent of the corresponding value of output respectively. In case of subsistence fishing, it is assumed that the expenditure forms 1 per cent of the value of output.

III. 1.(c): *Net Value Added*

Gross value added *(GVA)* in agriculture proper and livestock production are worked out by deducting from the value of output the total material costs listed above, and then adding to it the *GVA* from government irrigation system (which is estimated by income method). Similarly for forestry and logging and fisheries, *GVA* is calculated after deducting all operational costs and repairs and maintenance of fixed assets from the respective values of output. A sum of these three gives the figures for *GVA* in the agricultural sector as a whole. The point to be noted here, as mentioned earlier is that in the estimation of *GVA* evaluation of output is done at the *prices received by the producers* and inputs are evaluated at *purchasers' price.*

In order to estimate the net value added a deduction from the gross value added, is made so as to make allowance for consumption of fixed capital or what is

known as depreciation of fixed capital. Consumption of fixed capital is defined, as per the United Nation's System of National Accounts, as

> " ... that part of gross output which is required to replace fixed capital used up in the process of production during the period of account."[9]

This definition bears a close resemblance with what Marx terms as the value of fixed capital transferred to the final product in the process of production. In the case of circulating capital the entire value of it transfers itself to the value of the final product during its turnover period, whereas only a part of the value of fixed capital is transferred to the final product. It can be said that a part of fixed capital is used up (consumed, in modern terminology) in the process of production, which is equivalent to consumption of fixed capital. These categories used by Marx are very much consistent with the modern national income or corporate income terminologies. Sweezy outlines this merit in his *Theory of Capitalist Development*:

> "Total value is equivalent to gross receipts from sales, constant capital to outlay on materials plus depreciation, variable capital to outlay on wages and salaries, and surplus value to income available for distribution as interest and dividends or for reinvestment in the business. Marx's value theory thus has the great merit, unlike some other value theories, of close correspondence to the actual accounting categories of capitalist business enterprise. ...
>
> Nevertheless, it is important not to overlook the difference between the Marxian income concepts and those, which are employed by most modern investigators. ... gross national income, commonly include $V + S$ plus that part of C which represents depreciation of fixed capital, but excludes the rest of C. By net national income, they mean simply $V + S$, which includes all payments to individuals plus business savings."[10]

In this context, however, one crucial distinction must be borne in mind. The above mentioned categorisation of capitals into fixed and circulating capitals is analytically distinct from categorising them into constant and variable capitals. The latter categories are central to the analysis of the dynamics of capitalism, i.e., generation and accumulation of surplus value, whereas the former categories of fixed and circulating

[9] Central Statistical Organization,National (1989), *Accounts Statistics – Sources and Methods*, p. 253.
[10] Sweezy (1991), *Theory of Capitalist Development*, p. 63.

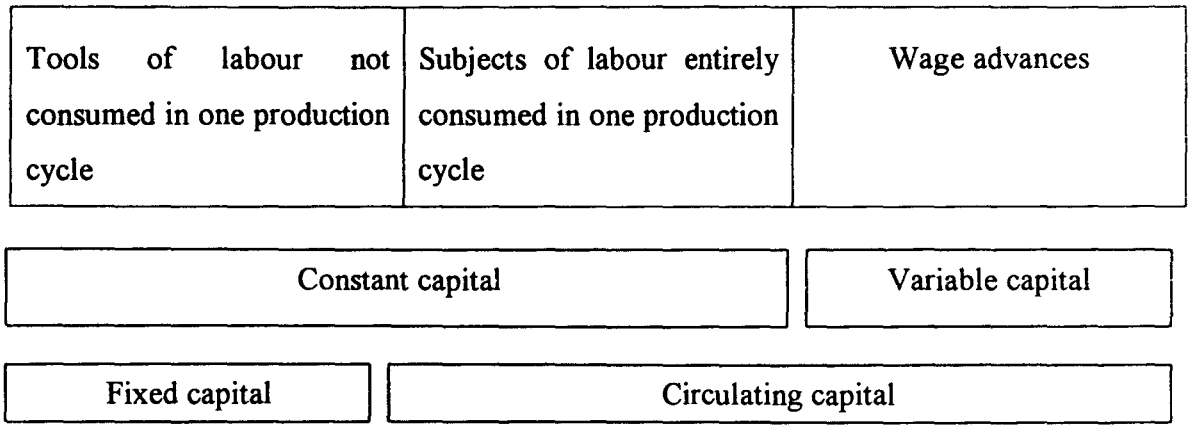

Figure 2.1: Distinction between constant and variable; and fixed and circulating capitals

capitals were devised to understand the circulation of capital over different cycles of production. Variable capital consists of wage advances to labourers which are entirely consumed in the production process in a single cycle of production. On the other hand constant capital includes not only capital equipments which are fixed in nature and do not get exhausted in one production cycle, but also other material goods which are subject of labour, e.g., raw materials, etc. Fixed capital thus, is only a part of constant capital. Circulating capital, on the other hand, is that part of constant capital which is entirely consumed in the same production cycle (raw materials, etc.) and wage advances. This can be expressed as in Figure 2.1.

The method, which is used to estimate the consumption of fixed capital, is the Perpetual Inventory Method, a brief outline of which is presented below.

1. Fixed assets are classified into different classes of assets and then realistic assumptions are made about the average life span of each class of assets. If L^i is the average length of life of assets of class i, then $L^i s$ are assumed for $i = 1,2,\ldots,m$, when there are m different classes of assets.

2. Gross fixed capital formation is estimated for all is and for L years prior to th year, say Y, for which consumption of fixed capital or stock of capital are to estimated, i.e., $GFCF_{i_l}{}^{i}$[11] is estimated for i = 1,2,.....,m and l = 1,2,.....,l.

[11] L is different for different i's. Therefore for a particular class of assets i, average length of lif denoted as L^i.

3. With appropriate price indices, these estimates of $GFCF_{i_1 i}$ at current prices are converted into estimates of $GFCF_{i_1 i}$ at constant prices.[12]

4. Gross fixed capital stock *(GFCS)* at constant prices at the beginning of the year Y is estimated as

$$GFCS_i^y = \sum_{l^i=1}^{l^i} GFCF_{i_l i}$$

and for the sector as a whole

$$GFCS^y = \sum_{i=1}^{m} GFCS_i = \sum_{i=1}^{m} \sum_{l^i=1}^{l^i} GFCF_{i_l i}$$

Where *GFCSy* is the gross fixed capital stock at constant prices at the end of the year *Y*.

5. Estimates of consumption of fixed capital (at constant prices) are arrived at by dividing $GFCS_i$ by L^i.

$$CFC_i = \frac{GFCS_i}{L^i} = \frac{\sum_{l^i=1}^{l^i} GFCF_{i_l i}}{L^i}$$

Estimates of consumption of fixed capital at current prices are arrived at by using relevant price indices.

6. Estimates of net fixed capital stock (NFCS) for the year *Y* is arrived at as:

$$NFCS_i^y = GFCS_i^y - \sum_{l^i=1}^{L^i} CFC_{i_l i} = \sum_{l^i=1}^{L^i} GFCF_{i_l i} - \sum_{l^i=1}^{L^i} CFC_{i_l i}$$

This is first calculated at constant prices and then converted to current prices among relevant price indices.

7. This gives the figure for the capital stock at the end of the year *Y*, which is maintained year-by-year following the same procedure.

[12] A list of appropriate price indices used for this purpose is given in Appendix 2.2.

Consumption of fixed capital thus arrived is deducted from the estimates of gross value added, to yield the estimates of gross value added, i.e.

$$NVA = GVA - \sum_{i=1}^{m} CFC_i$$

When estimates are to be made at current prices, estimates of *CFC* at current prices are used, and when *NVA* at constant prices is estimated. *CFC* at constant prices is used. The method of converting *CFC* at current prices into *CFC* at constant prices and vice-versa is explained above. Gross value added at constant prices is arrived at by a method of double deflation wherein different items of output and input are established at base-year prices. Physical quantities of output of agriculture and livestock production are estimated at base-year prices (in this study 1980-81 is taken as the base year). As regards inputs where information on quantity is available, these are evaluated at base year prices, and where only value data are available, these are deflated by price indices of relevant commodities. Estimates of irrigation charges and operation of government irrigation system at constant prices are arrived at by projecting the base-year values by the trend in area irrigated. In forestry and logging, for major forest products, quantity data are available and these are evaluated at base-year prices. For the evaluation of minor forest products at constant prices a ratio method is used, where

$$v_{\min,b} = \frac{v_{\min,c}}{v_{maj,c}} \times \left(v_{maj,b}\right)$$

where,

$v_{min,b}$: value of output of minor forest products at base-year prices
$v_{min,c}$: value of output of minor forest products at current prices
$v_{maj,b}$: value of output of major forest products at base-year prices
$v_{maj,c}$: value of output of major forest products at current prices

Implicit in this method is an assumption that the movement of prices of minor forest products and that of major forest products are similar. In fishing, the quantity data is evaluated at base-year prices. In both cases, i.e. in forestry and logging and fisheries, since input costs are assumed to be a fixed proportion of the value of output,

relevant input costs at constant prices are estimated as relevant proportion of value of output at constant prices.

III. 2 Estimation of Total Labour Cost

Total labour cost is constituted by wage cost of agricultural labourers and imputed value of family labour. These two are discussed separately below.

III. 2.(a): *Estimation of Wage Costs of Agricultural Labourers*

Annual reports of NAS carry[13] data on factors incomes, divided into three categories – compensation of employees, operating surplus and mixed income of self-employed. In the present study compensation of employees in agriculture proper, livestock production, forestry and logging and fisheries is taken as the wage cost of hired workers (including casual as well as attached workers). A brief outline of the method used for estimation of compensation of employees is discussed below.

Firstly, the *NVA* is agriculture is divided into two sectors --- public sector and private sector. Public sector consists of operation of government irrigation system. Data on factor incomes including compensation of employees *(CoE)* are obtained from governments' budget documents. *NVA* in private sector is further divided into three categories – (i) plantation crops, (ii) crop production excluding plantation crops, and (iii) animal husbandry. Production activities of plantation crops are very identical to activities in private corporate sector; the distribution of factor incomes and property incomes derived from Company Finance Studies conducted by the Reserve Bank of India (RBI) is superimposed to get the estimates for different categories of factor incomes and property incomes.

Cost of Cultivation Studies (CCS) contains data on different types of operational costs per hectare for selected states and crops. *CoE* in crop production excluding plantation crops is estimated, per hectare, as the cost of casual human labour and attached human labour per hectare. Aggregate figures are arrived at by taking weighted sum using area under different crops. A ratio of *CoE* to *NVA* for each year is worked out. Ratio of output to NVA for crop production is worked out from *CCS* and *NAS*, which gives *NVA* for crop production for each year. The ratio of *CoE*

[13] With special supplement National Accounts Statistics –Factor Incomes, 1994, for years 1980-81 to 1989-90.

to *NVA* is then multiplied to *NVA* thus obtained for crop production for each year to get the estimates of COE for each year for crop production.

In livestock production, the estimates of *CoE* are based on 11^{th} round of NSS conducted between August 1956 and January 1957 (findings of which are published in Report No.65: Tables with Notes on Animal Husbandry). Wage rates for services like herding, attending, and medical, pedicure and other services are given and estimates of *CoE* per cattle is worked out for the year 1955-56. Livestock population is projected using subsequent Livestock Census data, which is then converted into cattle equivalents and divided between agriculture, livestock and transportation. Number of cattle (equivalent) in livestock production is multiplied with the estimate of *CoE* per cattle (for the year 1955-56) to get the estimates of *CoE* for each year at 1955-56 prices, which are converted into current prices by using the index of daily wages of other agricultural labourers.

As regards forestry and logging, distribution of factor incomes is available from governments' budget documents for the forests exploited by government agencies. In the absence of any information about the rest, the remaining part of *NVA* is treated as mixed income of self-employed. In fisheries the norm for distribution of factor incomes are based on two studies published by the Indian Institute of Management, Ahmedabad.[14] A simple average of factor income distribution is superimposed on the *NVA*. Trends in working force obtained from population are further superimposed over all the years.

The estimates thus found are given at current prices. To convert it to *CoE* at constant prices (1980-81:100), figures are deflated by the consumer price index for agricultural labourers obtained from the Reports on Currency and Finance, RBI.

III.2.(b): *Estimation of Imputed Value of Family Labour:*

If wage cost of agricultural labourers is deducted from the *NVA* what is left is that part of produce which remains with the cultivators after making payments for all material costs and wage labour cost. But this is not the surplus. Total labour cost also consists of imputed value of family labour, which has to be deducted for getting the

[14] 'Inland Fish Marketing in India' and 'Marine Fish Marketing in India' published by IIM, Ahmedabad, cf., National Accounts Statistics - Sources and Methods, op. cit.

estimates of surplus. In the present study, the value, which is imputed for family labour, is the wage cost of agricultural labourers, i.e., it is assumed that the cost of labour is same for the two kinds of labour, i.e., *necessary labour* is equal in both cases. How the estimates of imputed value of family labour are derived is illustrated below.

The estimates of wage labour cost are available from NAS reports (see the last subsection III.2.(a)). If the number of agricultural labourers for each year is divided by the total wage bill (assumed to be equal to *CoE* in this study) estimates of wage cost per agricultural labourer per annum can be obtained:

$$\text{wage costs per agricultural labourer per annum} = \frac{L_w}{W}$$

where

L_w is the total annual wage-bill
W is the number of agricultural labourers in that year

Now, the number of family workers engaged in the agricultural sector is estimated for each year. Wage cost per agricultural labourer per year, then, is multiplied by the number of family workers in a particular year. This gives the estimates of imputed value of family labour, i.e.,

$$L_f = l_w \times F = \frac{L_w}{W} \times F$$

where,

L_f is the imputed value of family labour,
l_w is the wage cost per agricultural labourer per annum,
F is the number of family workers in that year,
and the rest of the symbols are defined as above.

It is not necessary to assume here that the seasonality of employment affects wage labourers and family workers identically, i.e., the number of days worked is same for both of these two kinds of workers. The days worked may be different and so may the daily return to labour in the two segments. All that is assumed is that total earnings is the same for the purpose of imputation.[15]

[15] Usually what is observed is that a family worker works a greater number of days than a wage labourer, but daily return to the latter is less than daily wage rate.

Before proceeding further to explain the exact method by which the number of agricultural labourers and family workers are estimated, certain concepts used in estimation need to be clarified. In absence of any year-by-year information about the imputed value of family labour or number of agricultural labourers and family workers, information of population census is used. Concepts used therein should be clarified in order to bring out any inconsistency involved in the estimation exercise.

Census data classifies all workers in nine industrial categories of which three are of use for the purpose of the study – (i) cultivators, (ii) agricultural labourers, and (iii) those engaged in livestock, forestry, fishing, hunting, plantations, orchards and allied activities. The first and the third categories are clubbed together to get the estimates of family workers.

Cultivators are defined as "person ..... engaged either as employer, worker or family worker in cultivation of land owned or held from government or held from private persons or institutions for payment in money, kind or share of crop."[16] It "included supervision or direction of cultivation".[17]

Family workers in the present study not only include cultivators but also those engaged in livestock production, forestry, fishing and hunting, plantation, fruit growing, etc.

Agricultural labourers are defined as " (A) person who works in another person's land for wages in cash, kind or share of crop".[18] Confusion may arise due to inclusion of 'share of crop' in the above definition. But it has been made clear that this is not to imply tenants who are already included in the 'cultivators' category. It has further been made clear that they "had no risk in cultivation" and "had no right of lease or contract on land on which he worked".[19]

All workers are divided into two kinds of workers --- main and marginal. *Main workers* are defined as "those who had worked for the major part of the year preceding the date of enumeration".[20] Major part of the year implies working for a

[16] *Census of India*, (1991), Part - II (B)-(i), Prumary Census Abstract, vol. I, p. lxi.
[17] Ibid.
[18] Ibid.
[19] Ibid.

[20] Ibid, p. liii. These are estimated with "usual status approach".

minimum of 183 days or six months during the year. *Marginal workers* are defined as "those who worked any time at all in the year preceding the enumeration but did not work for a major part of the year".[21] It should be noted that a person who received an income (or surplus in any form), but did not work for getting it, is not treated as a worker. A capitalist landlord who supervises the cultivation is treated as a worker but a rent-seeking landlord who is 'absentee' is not.

Estimation of Number of Family Workers and Agricultural Labourers:

As mentioned earlier the number of cultivators and those engaged in livestock production, forestry, fishing and hunting, plantation, fruit growing, etc. are clubbed together to get the estimates of the number of family workers. Census data provide information on the number of agricultural labourers and cultivators and those engaged in forestry, fishing and hunting, plantation, fruit growing, etc. at two points of time. Estimation of the number of agricultural labourers and family workers can be done in two ways. First, only main workers can be considered, and secondly, main and marginal both can be considered.

Case [A]: When only main workers are considered:

The number of agricultural labourers is obtained at two points of time from two censuses (1981 and 1991). On the basis of these two figures the compound rate of growth is calculated. The number of agricultural labourers is projected from each year starting from 1980-81 to 1995-96 on the basis of the compound rate of growth. Similarly, compound rate of growth is also calculated for family workers[22] and year to year projection is made.

Case [B]: When both main and marginal workers are considered:

The number of marginal workers is available at two points of time from two censuses (1981 and 1991). But decomposition of marginal workers in different categories, e.g. agricultural labourers, cultivators, etc., is available only in the 1981 census. In order to estimate the number of workers in different categories one may assume that the structural composition of marginal workers has remained the same

[21] Ibid.

[22] Cultivators and those engaged in forestry, fishing and hunting, plantation, fruit growing, etc. are clubbed together to get the number of family workers in 1981 and in 1991. The compound growth rate is calculated and year-wise projection is made.

over time. As it is observed in the National Accounts Statistics-Sources and Methods 1989:

> ".... that the estimates of working force of hired worker which is directly related to compensation of employees is not available on comparable basis at two points of time. In the absence of this data use has been made of estimates of working force based on Population of Census etc. as given in National Accounts Statistics-Sources and Methods '89. This procedure is based on the assumption that the proportion of hired worker to own account worker remains same throughout the study and thus the trend in compensation of employees; mixed income of self-employed and net domestic product will be more or less same since the share of rent and interest is comparatively low."[23]

In case of marginal workers where decomposition has not been given in the 1991 census, the 'unchanged structural composition', assumption may be applied. Assuming away any structural change, however, will definitely underestimate the number of agricultural labourers since the proportion of hired labourers within total marginal workers is increasing over time. One way to rectify this problem is to take some sort of proxy-variable for the extent of structural change, and the extent of structural change in the composition of main workers may serve as a proxy. Even this may underestimate the number of agricultural labourers in the marginal workers category, for the fact that it has been observed historically that not only is the share of agricultural labourers in marginal category higher than the category of main workers at any given point of time, but the process of differentiation, i.e., rate of increase in the proportion of agricultural labourers is higher in the marginal workers category. However, the extent of change in structural composition of main purpose can be used as a good approximation.

In this study this is attempted to be done in two ways:

Case [B]-(i):

The decadal growth of cultivators, workers engaged in livestock production, forestry, fishing and hunting, plantation, fruit growing, etc. and agricultural labourers in the category of main workers are calculated on the basis of respective figures given in 1981 and 1991 censuses. These growth rates have been applied to the number of workers, in respective groups in the category of marginal workers in 1981 census. This yields the number of workers in respective groups in the category of marginal

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[23] CSO, *National Accounts Statistics – Factor Incomes*, (1994).

workers in 1991. The first two groups are clubbed together to get the number of family workers in 1981 and in 1991. Number of agricultural labourers in the marginal category is added to that in the main category to get the total number of agricultural labourers. Similarly, the total number of family workers is obtained by adding main and marginal categories. On the basis of number of the agricultural labourers and family workers in 1981 and in 1991, annual compound rate of growth for both is calculated. With this annual compound growth rate, the average projection for both groups is made.

Case [B]-(ii):

Structural composition of main workers is given at two points of time in 1981 and 1991. The proportion of agricultural labourers and family workers has undergone changes over time. Percentage change in these proportions of main workers is calculated. The same percentage change in the proportion of cultivators, those workers engaged in livestock production, forestry, fishing and hunting, plantation, fruit growing, etc., and agricultural labourers in the category of marginal workers is applied to arrive at the figures for these three groups of marginal workers in 1991. A similar exercise (see Case[B]-(i)), as done before, has been conducted to calculate the annual compound rates of growth and year-wise number of workers in both goods.

The detailed enumeration exercise is presented in Appendix 2.3 at the end of this chapter. Once the estimates of total annual wage bill (L_w), number of agricultural labourers (W) and number of family workers (F) are obtained, total annual imputed value of family labour (L_w) is estimated for all years, using the formula --

$$L_f = \frac{L_w}{W} \times F$$

As estimates of annual wage bill are available at current prices which are converted into estimates at constant prices using consumer price index for agricultural labourers, estimates of imputed value of family labour has also been obtained at current as well as constant prices.

Estimates of total labour cost at current and constant prices are obtained by summing together the annual estimates of wage cost of agricultural labourers and imputed value of family labour, i.e.,

$$\text{Total labour cost } (L) = L_w + L_f$$

As L_f has been estimated by three different methods, three alternative estimates are obtained from imputed value of family labour and thus, also for total labour cost (L).

III. 3 Estimation of Surplus

After arriving at the estimates of net value added and total labour cost, estimation of surplus requires a simple deduction of total labour cost, including wage-labour cost and imputed value of family labour, from the net value added.

$$\text{Surplus } (S) = NVA - L = (X\text{-}M) - (L_w + L_f)$$

Surplus estimation has been done at current as well as constant prices. As three alternative methods have been applied to estimate the imputed value of family labour, three alternative estimates of surplus have been obtained. It has been found that the latter two estimates, where both main and marginal kind of workers are considered in the estimation of imputed value of family labour, by two methods–one based on decadal growth rates of different groups of workers in marginal workers' category, and second based on the percentage change in the proportion of the three groups, are almost similar. In most of the years, the estimated value of the surplus by the latter two methods differ by less than a crore of rupees and the maximum difference observed in the year 1995-96 is about three crore rupees at current prices. At constant prices, these two alternative estimates differ by less than one crore rupees for all the years. This slight difference is insignificant for the present purpose and one of these two can be used for analytical purposes. Since the estimates based on 'decadal growth rate' method are slightly higher than the estimates based on

'percentage change in proportions' method, and the estimates made, taking into account only main workers, are always less than both of the earlier two, the estimates based on 'decadal growth rate' method are retained with that based on 'main workers only' so as to cover the entire possible range.

III.4 Estimation of Profit

Annual reports of NAS give information on total factor income under three heads — compensation of employees, operating surplus and mixed income of the self-employed. For the years 1980-81 to 1989-90, estimates are available for all these three components of value-added.[24] Subsequently, operating surplus and mixed income of self-employed are clubbed together.

Operating surplus consists of three kinds of surpluses generated by economic activities — rent, interest and profit. In the case of mixed income of the self-employed, it is difficult to identify separately, the return to labour and property. NAS annual reports also carry data on property income viz. rent and interest. The data on rent are based on CCS reports, which provide information, or rent paid for leased-in land per hectare. It is assumed that there is no rent component in animal husbandry. Estimates of interest payments are based on All India Debt and Investment Survey (AIDIS) data for a particular year and then estimates for different years are made by moving forward the benchmark estimates (from AIDIS) by an index of interest, using the interest rate and outstanding credit for respective activities.

Net Value Added (NVA) = Compensation of Employees (CoE) + Operating Surplus (OS)
+ Mixed Income of Self-employed (MI)

where,

Operating Surplus (OS) = Rent (R) + Profit (P_{OS}) + Interest (I)

or, $$P_{OS} = OS - (R + I)$$

But, profit so obtained is only a part of operating surplus. Mixed incomes do contain elements of surplus as well as return to family labour, i.e., if we divide MI into two categories

[24] Ibid.

$$MI = S_{mi} + L_{mi}$$

We assume L_{mi} is equal to imputed value of family labour (L_f). Thus

$$MI = S_{mi} + L_f$$

Now the total surplus can be expressed as a sum of operating surplus and the surplus part of mixed income, i.e.,

$$\text{Total Surplus } (S) = OS + S_{mi}$$

It is assumed that S_{mi} is the profit of own account workers. Then, total profit can be expressed as:

$$P = P_{OS} + S_{mi} = OS - (R+I) + (MI - L_f) = (OS + MI) - (R+I) - L_f$$

Thus estimates of profit are arrived at by deducting rent, interest and imputed value of family labour from operating surplus and mixed income of self-employed.

Now *NVA* can be expressed as

$$NVA = CoE + OS + MI$$

or, $$OS + MI = NVA - CoE$$

Substituting it into the above expression for profit, we get profit as

$$P = (NVA - CoE) - (R+I) - L_f$$

Since it has been assumed that $CoE = L_w$, we get

$$\begin{aligned} P &= (NVA - L_w) - (R+I) - L_f \\ &= NVA - (L_w + L_f) - (R+I) \\ &= NVA - L - (R+I) \end{aligned}$$

Thus, alternatively, it can also be estimated by deducting the total labour cost and rent and interest from *NVA*.

These estimates have been made at current as well as constant prices. Since labour cost at constant prices had been estimated by using (*CPI-AL*), in order to retain

consistency, rent and interest in agriculture at current prices have been deflated by using (*CPI-AL*).

III.5 Estimation of Surplus

With the given estimates of rent and interest and obtained estimates of profit, alternatively estimates of surplus are drawn up by the summing up of rent, interest and profit, i.e.,

$$S = R + I + P$$

These estimates differ from the former estimates slightly due to the difference in the sources of data.

Limitations:

Major limitations are involved in the estimation of net value added and are related to non-availability of reliable data and problems in collection of data. Data on production of many principal crops and most of the minor crops are not collected on any scientific basis and hence estimates remain questionable on this count. Incomplete coverage and substantially big time lag also affect the quality of data. Differences in methods of preparing estimates also cause problems while making aggregate estimates.

Data on prices are more questionable. Problems related with prices can be of two kinds. First, the information on prices may not be complete at all. Secondly, problems relating to the choice of prices in evaluation of output are of greater importance. Variability of prices asks for evaluation of output at prevailing prices, at different points of time at different places. But efforts in this direction are limited and "(E)valuation of output at state average prices worked out as weighted average of district level prices during peak marketing period is, therefore, considered to be the most appropriate under the present circumstances."[25]

[25] CSO, *National Accounts Statistics-Sources and Methods,* (1989), p. 50.

Estimates regarding some input costs, particularly that incurred on current repairs and maintenance of fixed assets are normally based either on some benchmark ratios based on different survey findings and retained subsequently or on certain regular surveys (e.g., AIDIS, etc.) but which are not conducted on yearly basis. In the absence of continuous revision of these ratios the same are used which overestimate or underestimate the values of respective items. In some cases, these are fixed arbitrarily.

Estimates of imputed value of family labour are based on the assumption that the annual return to family labour is equal to the annual wage income of agricultural labourers. Any difference will result in deviation from the actual values. Furthermore, projection of the number of agricultural labourers and family workers are based on uniform compound rate of growth obtained from figures at two points of time (1981 and 1991) which may be different from the actual values.

Estimation of the Rate of Return

The rate of return in the present study takes into account the return on the total stock of capital involved in one cycle of production. The total stock of capital involved in one cycle of production, given the fact that a significant area under cultivation is cropped more than once in a year, is different from the total capital involved in one year. The stock of total capital consists of two parts: the stock of fixed capital, and the working capital involving all material costs of production including seed, feed, fertilizers, fuel, electricity etc. as well as labour cost. The stock of fixed capital is used over a number of production cycles whereas working capital outlays on material and labour costs are exhausted in one cycle of production. Since the rate of return considers only that capital expenditure which is incurred during one cycle of production, which is smaller than that incurred over a year, it can be defined as a ratio of surplus to the total capital involved during one cycle of production. Thus the rate of return,

$$r = \frac{surplus}{gross\ stock\ of\ fixed\ capital\ +\ working\ capital\ advanced}$$

where working capital advanced includes capital advanced to cultivate *net sown area*, and not *gross sown area*.

Given the nature of data requirement it is not possible to estimate the rate of return for the agricultural sector as a whole including forestry, fishing, plantations etc., because it is not possible to work out the exact proportion of the total working capital that is advanced during one cycle of production. Hence these estimates cover only agriculture proper and livestock production. It is also not possible to exclude livestock production as the division of total input cost, including total labour costs, between agriculture proper and livestock production is not given.

The following steps are involved in the estimation exercise.

(I) The estimates of net fixed capital stock[26] are available from the annual reports of NAS, both at current and constant prices. The estimates of consumption of fixed capital are also available from the same source. These are added to the estimates of net stock of fixed capital to get the estimates of gross stock of fixed capital. This is, however, different from what is known as the gross capital stock in the conventional national income terminology. In the present study, what is required is the former. Inclusion of consumption of fixed capital in this may create some confusion as one may be tempted to consider it as an annual expense. But for our analytical purpose, what interests us is the nature of capital outlay on agricultural equipment, machinery, etc. As far as estimation of the rate of return is concerned, going by the fact that these capital outlays are not made separately in all cycles of productions and equipment and machinery purchased once last for a number of production cycles, consumption of fixed capital will not form a part of the working capital which needs to be advanced in each cycle of production.

(II) The estimates of total material working capital are obtained from the same source which include all material costs of production excluding consumption of fixed capital during one year. To this, the total labour cost is added. A fresh estimate of

[26] . The detailed procedure to estimate net fixed capital stock has already been explained above while discussing the estimation of consumption of fixed capital. [see section III.1(c)].

total labour cost will be needed as we are considering only agriculture proper and livestock production. The exercise to estimate the total labour cost is the same as above, but here one modification is made. Earlier, from the census figures, the number of cultivators and those engaged in livestock production, forestry, fishing, hunting, plantations, etc. were clubbed together to get the estimates of family workers. Three possible measures were derived and from them we retain two: one, considering main workers only, and second, considering both main and marginal workers with decomposition of marginal workers based on decadal growth rate method. But given the fact that now only agriculture proper and livestock production is considered, this 'all-inclusive' category of family workers will overestimate the number of the latter. Those engaged in forestry, fishing, hunting will have to be excluded. But once again, non-availability of any such decomposition of the category of those engaged in forestry, fishing, hunting as well as in livestock production plantations, fruit growing, etc. into two categories consistent with the definition of agriculture proper and livestock production given in NAS, the whole lot of workers engaged in these activities are excluded. Thus family workers are taken to be cultivators only. Here also two alternative measures are estimated – one, by considering only the main workers and second, by considering both the main and marginal workers. Thus given the inconsistency between two data sources, the problem is tried to be solved by estimating four alternative measures, covering all possible variation from the actual values, but themselves being not actual.

These four measures are derived considering:

i. Cultivators, as well as those engaged in livestock production, forestry, fishing, plantation, etc. considering main workers only.

ii. Cultivators as well as those engaged in livestock production, forestry, fishing, plantations, etc., considering both main and marginal workers.

iii. Cultivators only, considering main workers only.

iv. Cultivators only, considering both main and marginal workers.

These four estimates of the number of family workers are then multiplied by the wage cost per agricultural labour per annum to get the four estimates of imputed value of family labour. Here annual wage-bill of agriculture proper and livestock production are considered to estimate the wage cost per labourer per annum. All these estimates are made both at current and constant prices.

(III) To the estimates of total material capital and total labour cost, inventories are included in order to get the estimates of total working capital. The reason to include inventories in working capital is that the nature of inventories in agricultural production is such that these can be used as inputs in the production process. It is a commonly observable phenomenon in agriculture that the stock of finished or semi-finished goods are advanced as material inputs or as wages to labourers.

(IV) As mentioned earlier, it is not the total working capital, which goes into the calculation of the rate of return, but only the advanced part of it is considered as advanced during one cycle of production. It has been assumed that during one cycle of production the working capital is advanced in the beginning itself. In order to estimate the advanced part of it, figures of net sown area and gross sown area are utilised which are available from "Agricultural Statistics at a Glance" published by Directorate of Economics and Statistics, Department of Agriculture and Cooperation, Ministry of Agriculture. The total working capital is advanced to meet working expenses during one year, and thus for cultivating gross sown area. One production cycle, on the other hand, involves only net sown area. For cultivating twice or even more than twice, working capital can be obtained from the surplus obtained during the earlier cycle of production, on the net sown area. Thus only a fraction of the total working capital outlays in one cycle of production. This fraction can be determined on the basis of the ratio of net sown area to gross sown area. Assuming that input costs including labour costs are evenly distributed on all lands, the same proportion can be used to determine the advanced working capital. Thus,

$$\text{Working capital advanced on net sown area} = \text{total working capital} \times \frac{NSA}{GSA}$$

where NSA: net sown area

GSA: gross sown area.

Four alternative estimates are made on the basis of four alternative estimates of total labour cost.

(V) The estimates of surplus are arrived at by deducting the total labour cost from the net value added. On the basis of four alternative estimates of the total

labour coast, four alternative estimates of surplus are made. In order to get the estimates of the rate of return, the estimates of surplus are divided by the estimates of gross stock of fixed capital plus working capital advanced.

We can summarise the whole estimation exercise as following. First, the gross stock of fixed capital, K_{fg}, is calculated as:

$$K_{fg} = K_{fn} + q$$

where K_{fn} : net stock of fixed capital including inventories

q : consumption of fixed capital

Total working capital can be expressed as:

$$K_{tw} = K_{mw} + L + v$$

where K_{mw} : total material working capital (including seed, feed, fuel etc.)

L : total labour cost.

v : inventories

Then working capital advanced can be calculated as:

$$K_{wa} = K_{tw} \times \frac{NSA}{GSA}$$

where NSA: net sown area

GSA: gross sown area.

Finally rate of return can be expressed as:

$$r = \frac{S}{(K_{fg} + K_{wa})}$$

where S is the surplus.

Four alternative estimates have been prepared on the basis of four alternative estimates of total labour cost. These estimates, further, are made both at current and constant prices.

Limitations:

As mentioned earlier, given the nature of data requirement and availability of such data, the estimates of the rate of return could be made only for agriculture proper

and livestock. At the same time agriculture proper could not be isolated from livestock production as division of the total material costs and the total labour cost between these two is not available. This is more clearly manifested in the estimation of the total labour cost and that of imputed value of the family labour in particular. Inconsistency between the definition of agriculture as an activity and workers covered under agriculture, owing to different methods and sources (NAS and census), has severely limited the estimate exercise. Four alternative measures, therefore, try to do away with this particular problem by covering a range of possible actual values, but actual values could not be estimated. Given the nature of connectedness of employment in these two kind of activities, however, undermines the magnitude of the problem. Most of the workers engaged in livestock production have agricultural activity as their principal work. Only a relatively insignificant proportion of the workers engaged in livestock production will have it as their principal activity, and a large proportion will have it only at a subsidiary activity to agriculture.

Estimation of the rate of return involves a division of the total working capital in order to estimate advanced proportion of it. In the present study it has been done on the basis of the ratio of net sown area to gross sown area, the figures for which are applicable only to crop production. This has been extended not only to include all agricultural activities but also to livestock production as it could not be excluded. Therefore a composite estimate has been made. It is very clear that the resulting estimates will deviate from the actual values as the same proportion is imposed on livestock production from Despite the limitations involved in this method, there is no other way but to proceed with it, given the difficulty in excluding livestock production from agriculture. The fact that these two activities are carried out in close connection as far as capital involvement is concerned, the estimates thus arrived are not completely devoid of any meaning.

It has also been assumed that all working capital, which is there to be advanced to carry out the production process, is advanced in the beginning itself. It is very commonly observed, however, that not all of the working expenses are incurred at the start of the cultivating season. Input costs, particularly, the wage cost is spread over the entire season, starting from sowing to harvesting. In so far as this spread may result in reduction of the requisite amount of working capital needed to be advanced,

since these may be financed by the sale of inventories or of agricultural by products, the present estimate may underestimate the rate of return by raising the actually needed amount of working capital to be advanced.

Moreover, it has been assumed that the input costs are evenly distributed on all land. Definitely, this neglects the fact that input requirements differ substantially across seasons, crops and regions. But in the absence of any detailed information in this regard, one is left with no other option, but to use the ratio of net sown area to gross sown area assuming evenly distributed input costs, to estimate working capital advanced.

APPENDIX 2.1

LIST OF AGRICULTURAL CROPS AND LIVESTOCK PRODUCTS

[A] Agricultural crops

I.	Principal crops	
	(1) Cereals:	Paddy, wheat, jowar, bajra, barley, maize, ragi and small millets
	(2) *Pulses*:	Gram, moong, arhar, horse-gram, masoor, urad and other pulses
	(3) *Oilseeds:*	Linseed, sesamum, groundnut, rapeseed, & mustard, castor, coconut, safflower, niger seed, soyabean, and sunflower.
	(4) *Sugars:*	Sugarcane
	(5) *Fibres:*	Kapas, jute, sunhemp, mesta
	(6) *Drugs & Narcotics:*	Tobacco
	(7) *Condiments & Spices:*	Cardamom, dry chillies, garlic, black pepper, dry ginger, turmeric, coriander and arecanut
	(8) *Fruits and vegetables:*	Banana, potato, sweet potato, tapioca, and onion
	(9) *Other crops:*	Guar seed
II.	Minor crops:	Cashewnut, indigo, papaya, tea, coffee, rubber, opium, mango, citrus fruits and grapes
III.	Miscellaneous & Unspecified crop groups:	Other cereals, other oilseeds, other sugars, other fibres, other dyes and tanning materials, other drugs and narcotics, other condiments and spices, other fruits and vegetables, fodder, miscellaneous food crops and miscellaneous non-food and grass crops
IV.	Other products and by-products:	The remaining products and by- products like gur (indigeneous production only), baggase and by-products of crops like stalks and straw, cotton, jute and arhar sticks and cane trash.

B. Livestock products

I.	Milk	Milk
II.	Meat group	
	1. *Meat*	Beef, mutton, pork, poultry meat
	2. *Meat products*	Fats, heads and legs
	3. *By-.products*	Hides, skins, guts, blood, bones, horns, hoofs, tail- stump, useless meat and oesophagus
III.	Eggs	Eggs
IV.	Wool & hair	
	1. *Wool*	Sheep wool
	2. *Hair & bristles*	Goat hair, camel hair & pig bristles
V.	Dung	Dung Fuel and dung manure
VI.	Silk worm cocoons &honey	Silk worm cocoons & honey
VII.	Increment in stock	Increment in livestock of all categories of animals

Source: CSO, *National Accounts Statistics - Sources and Methods*, (1989).

APPENDIX 2.2

PRICE INDICES USED FOR VARIOUS TYPES OF ASSETS

Activity		Type of Asset	Index used
1.Agriculture	1.1	Non- residential buildings and other construction works (improvement of land and irrigation works)	Index of cost of other construction works (accounted)
	1.2	Agricultural plantation	Index of cost of construction of other construction works (unaccounted)
	1.3	Machinery equipment (produced in organised sector)	Wholesale price index for non-electrical machinery
	1.4	Machinery equipment (produced in unorganised sector)	Wholesale price index for tools and implements
2. Forestry	2.1	Construction	Index of cost of construction of other construction works (unaccounted)
	2.2	Machinery	Wholesale price index for tools and implements
3. Fishery	3.1	Machinery	Weighted index of wholesale price index in respect of timber, diesel oil, nylon, terene, and mixed cotton

Source: CSO, *National Accounts Statistics - Sources and Methods*, (1989).

APPENDIX 2.3

ESTIMATION OF NUMBER OF AGRICULTURAL LABOURERS AND FAMILY WORKERS

Total number of main workers in 1981	**= 222,516,569**
Number of cultivators in main workers (*c*) in 1981	= 92,522,833
Number of those engaged in livestock production, forestry, fishing, plantations, etc. in main workers (*f*) in 1981	= 4,992, 651
Number of agricultural labourers in main workers (*w*) in 1981	= 55,499,602

Total number of main workers in 1991 = 285,932,493.

c in 1991= 110,702,346.

f in 1991 = 6,040,739.

w in 1991= 74,597,744.

Shares of c, f and w in main workers in 1981:

$$\text{Share of } c = \frac{92,522,833}{222,516,569} = 41.58\%$$

$$\text{Share of } f = \frac{4,992,651}{222,516,569} = 2.24\%$$

$$\text{Share of } w = \frac{55,499,602}{222,516,569} = 24.94\%$$

Shares of c, f and w in main workers in 1991:

$$\text{Share of } c = \frac{110{,}702{,}346}{285{,}932{,}493} = 38.72\%$$

$$\text{Share of } f = \frac{6{,}040{,}739}{285{,}932{,}493} = 2.11\%$$

$$\text{Share of } w = \frac{74{,}597{,}744}{285{,}932{,}493} = 26.09\%$$

Percentage change in proportions of c, f and w in main workers:

$$\text{Percentage change in proportion of } c = \frac{(38.72 - 41.58)}{41.58} = -6.88\%$$

$$\text{Percentage change in proportion of } f = \frac{(2.11 - 2.24)}{2.24} = -5.8\%$$

$$\text{Percentage change in proportion of } w = \frac{(26.09 - 24.94)}{24.94} = 4.61\%$$

Decadal growth rates of c, f and w in main workers:

$$\text{Decadal growth rate of } c = \frac{(110{,}702{,}346 - 92{,}522{,}833)}{92{,}522{,}833} = 19.65\%$$

$$\text{Decadal growth rate of } f = \frac{(6{,}040{,}739 - 4{,}992{,}651)}{4{,}992{,}651} = 20.99\%$$

$$\text{Decadal growth rate of } w = \frac{(74{,}597{,}744 - 55{,}499{,}602)}{55{,}499{,}602} = 34.41\%$$

Number of marginal workers in 1981 = 22,088,411.

c in 1981= 10,361,761.

f in 1981 = 434,968.

w in 1981= 8,864,018.

Shares of c, f and w in marginal workers in 1981:

$$\text{Share of } c = \frac{10,361,761}{22,088,411} = 46.91\%$$

$$\text{Share of } f = \frac{434,968}{22,088,411} = 1.97\%$$

$$\text{Share of } w = \frac{8,864,018}{22,088,411} = 40.13\%$$

Total number of marginal workers in 1991 = 28,198,877.

Two alternative methods have been adopted to determine the structural composition of marginal workers in 1991:

[1] ***Determination on the basis of percentage change in proportions of c. f and w in main workers:***

It is assumed that the sane percentage change in proportions of c, f and w in marginal workers has taken place as in main workers.

Proportion of c in marginal workers in 1981= 46.91%

Percentage change in proportion of c = – 6.88%

Proportion of c in marginal workers in 1991= $\left[46.91\left(1+\frac{-6.88}{100}\right)\right]\% = 43.68\%$

Proportion of f in marginal workers in 1981= 1.97%

Percentage change in proportion of f = – 5.8%

Proportion of f in marginal workers in 1991= $\left[1.97\left(1+\frac{-5.8}{100}\right)\right]\% = 1.86\%$

Proportion of w in marginal workers in 1981= 40.13%

Percentage change in proportion of w = 4.61%

Proportion of w in marginal workers in 1991= $\left[40.13\left(1+\frac{4.61}{100}\right)\right]\%$ = 41.98%

Proportions of c, f and w in marginal workers in 1991 have been calculated. Total number of marginal workers in 1991 is given. Thus, number of c, f and w in marginal workers in 1991 can be obtained.

Number of c in marginal workers in 1991 = $28{,}198{,}877\times\frac{43.68}{100}=12{,}289{,}071.$

Number of f in marginal workers in 1991= $28{,}198{,}877\times\frac{1.86}{100}=524{,}499.$

Number of w in marginal workers in 1991= $28{,}198{,}877\times\frac{41.98}{100}=11{,}837{,}889.$

[2] *Determination on the basis of decadal growth rates:*

It is assumed that the decadal growth rates of c, f and w in marginal workers are same as in main workers.

Decadal growth rate of c = 19.65%

Number of c in marginal workers in 1981 = 10,361,761.

Number of c in marginal workers in 1991 = $\left[10{,}361{,}761\left(1+\frac{19.65}{100}\right)\right]=12{,}397{,}847.$

Decadal growth rate of f = 20.99%

Number of f in marginal workers in 1981 = 434,968.

Number of f in marginal workers in 1991 = $\left[434{,}968\left(1+\frac{20.99}{100}\right)\right]=526{,}268.$

Decadal growth rate of w = 34.41%

Number of w in marginal workers in 1981 = 8,864,018.

Number of w in marginal workers in 1991 = $\left[8{,}864{,}018\left(1+\frac{34.41}{100}\right)\right]=11{,}914{,}127.$

Thus, three alternative estimates of number of c, f and w have been arrived at for 1981 and 1991, which can be summarised as the following:

Appendix Table 2.1: Number of Workers in 1981 and 1991

	In 1981			In 1991		
	Method 1	Method 2	Method3	Method1	Method2	Method 3
c	92,522,833	102,884,594	102,884,594	110,702,346	122,991,417	123,100,193
f	4,992,659	5,427,619	5,427,619	6,040,739	6,565,238	6,567,007
w	55,499,602	64,363,620	64,363,620	74,597,744	86,435,633	86,511,871

Note: In method 1, only main workers have been considered. In method 2, both main and marginal workers are considered together with the determination of the structural composition of marginal workers in 1991 based on *percentage change in proportion method.* In method 3 also, both main and marginal workers are considered together, but the structural composition of marginal workers in 1991 has been determined on the basis of *decadal growth rate method.* Superscripts 1,2 and 3 are henceforth used to refer to three methods respectively.

Number of family workers is obtained by summing up of *c* and *f*. The number of family workers (*F*) and agricultural labourers (*W*) in 1981 and in 1991 is given below:

Appendix Table 2.2: Number of Workers in 1981 and 1991

	In 1981	In 1991
F^1	97,515,484	116,743,085
W^1	55,499,602	74,597,744
F^2	108,312,213	129,556,655
W^2	64,363,620	86,435,633
F^3	108,312,213	129,667,200
W^3	64,363,620	86,511,871

Computation of annual compound rates of growth:

For F^1:

$$116,743,085 = 97,515,484\ (1+\mu)^{10}$$

$$\Rightarrow \log 116,743,085 = \log 97,515,484 + 10\log(1+\mu)$$

$$\Rightarrow \log 116,743,085 - \log 97,515,484 = 10\log(1+\mu)$$

$$\Rightarrow \log(1+\mu) = \frac{\log 116,743,085 - \log 97,515,484}{10}$$

$$\Rightarrow (1+\mu) = \text{antilog}\left[\frac{\log 116,743,085 - \log 97,515,484}{10}\right] = 1.018159360902$$

Similarly, for F^2:

$$(1+\mu) = \text{antilog}\left[\frac{\log 129,556,655 - \log 108,312,213}{10}\right] = 1.018071382301$$

For F^3:

$$(1+\mu) = \text{antilog}\left[\frac{\log 129,667,200 - \log 108,312,213}{10}\right] = 1.018158216522$$

For W^1:

$$(1+\mu) = \text{antilog}\left[\frac{\log 74,597,744 - \log 55,499,602}{10}\right] = 1.03001507864$$

For W^2:

$$(1+\mu) = \text{antilog}\left[\frac{\log 86,435,633 - \log 64,363,620}{10}\right] = 1.029924135126$$

For W^3:

$$(1+\mu) = \text{antilog}\left[\frac{\log 86,511,871 - \log 64,363,620}{10}\right] = 1.03001494051$$

On the basis of these annual compound growth rates of F^1, F^2, F^3, W^1, W^2 and W^3, yearly projections can be made. For example, after the end of five years, i.e., in 1985-86, the number of F^1 will be

$$(F^1 \text{ in } 1980\text{-}81)(1+\mu)^5$$

$$= 97{,}515{,}484\ (1.018159360902)^5$$

$$= 106{,}697{,}040.$$

The results are given in the following table.

Appendix Table 2.3: Number of Workers

year	number of agricultural labourers (main only) (W^1)	number of agricultural labourers (both main and marginal) (W^2)	number of agricultural labourers (both main and marginal) (W^3)	number of cultivators (main only) (F^1)	number of cultivators (both main and marginal) (F^2)	number of cultivators (both main and marginal) (F^3)
1980-81	55499602	64363620	64363620	97515484	108312213	108312213
1981-82	57165427	66289646	66295490	99286303	110269564	110278970
1982-83	58881252	68273306	68285345	101089279	112262288	112281439
1983-84	60648577	70316326	70334926	102924995	114291023	114320270
1984-85	62468949	72420481	72446025	104794048	116356419	116396122
1985-86	64343959	74587601	74620488	106697040	118459141	118509668
1986-87	66275248	76819571	76860217	108634590	120599861	120661592
1987-88	68264505	79118330	79167172	110607325	122779267	122852591
1988-89	70313470	81485877	81543370	112615884	124998058	125083375
1989-90	72423934	83924272	83990889	114660916	127256946	127354666
1990-91	74597744	86435633	86511871	116743085	129556655	129667200
1991-92	76836801	89022145	89108520	118863065	131897923	132021725
1992-93	79143064	91686055	91783107	121021542	134281501	134419004
1993-94	81518549	94429681	94537971	123219216	136708153	136859814
1994-95	83965335	97255408	97375523	125456798	139178658	139344944
1995-96	86485561	100165692	100298243	127735013	141693809	141875199

CHAPTER III

AGRICULTURAL SURPLUS AND RURAL POVERTY: SOME FINDINGS

We have two sets of estimates of different variables except that of the rate of return for which one set of estimates has been presented. The first of these two takes into account the agricultural sector as a whole, comprising agricultural proper and livestock production, forestry and logging and fisheries. The second considers only agriculture proper and livestock production. Therefore the very first inquiry will be to see whether there is any significant difference between these two sets of estimates. On the basis of the estimate made, it can be conclusively said that apart from the absolute values, estimates of variables which are expressed as ratios or proportion and rates are broadly similar, reflecting the fact that trends in both sets of estimates are similar. In many of the cases, trends are exactly similar. This is quite an expected result given the predominant share of agriculture activity in the agricultural sector taken as a whole.

In this chapter, the results are described. In the light of these findings some broad conclusions about the nature of agricultural development and rural poverty are drawn. These aspects are discussed in an overall context formed by particular kinds of perspectives on economic development. The interrelationship between the estimated variables and other macroeconomic indicators assume crucial significance for analysis of the results obtained. We begin, therefore, by describing the results obtained.

Results

Net value added (*NVA*) has experienced an overall increase of 56.44 percent over the period of 1980-81 to 1995-96, at constant prices. The share of *NVA* in total output at current prices has increased from roughly 71 percent to 74.5 percent, whereas at constant prices it has remained virtually stagnant at about 70 percent. There have been marked fluctuations in between. In Figure 3.1 below the share of *NVA* in total output has been shown. The same can be looked at for the share of the total material costs, as it is unity minus the share of *NVA*. These fluctuations, not only in the *NVA* but also in all the other variables, have been commented upon later in the

next section. These results are similar whether one considers only agriculture proper and livestock production or the whole of the agriculture sector. Apart from the *NVA*, it is the total material costs of production, which accounts for the rest of the share in total output. It has registered an overall increase over time of 57.64 percent at constant prices in agriculture proper and livestock production, and that of 58.89 percent in the agriculture sector as a whole. The share of total material costs at current prices has declined by about 4 percent and at constant prices it has remained roughly constant. This reflects the fact that the effect of price on these two have been opposite in direction and the prices of output have risen faster than that of all material inputs.

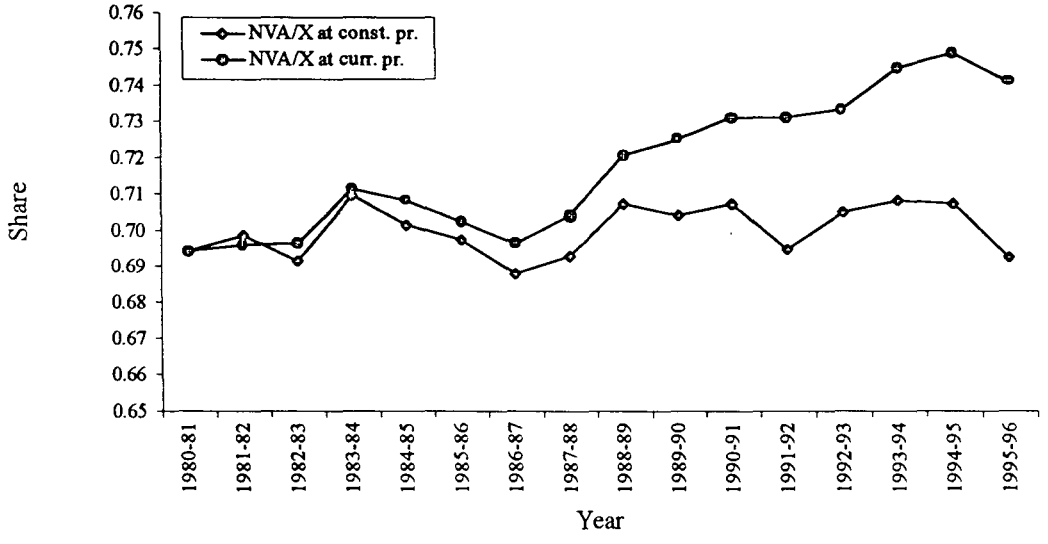

Figure 3.1: Share of NVA in Total Output

The net value added consists of the total labour cost and the surplus. Three alternative estimates of the total labour cost and consequently, of surplus, are made for the agricultural sector as a whole and four alternative estimates for agriculture proper and livestock production. The total labour cost at constant prices has increased by a little more than 37 percent in agriculture proper and livestock production. *The share of the total labour cost in total output has declined considerably over the period under examination both in current prices and in constant prices.* Figure 3.2 shows the trends in the shares of the total labour cost and surplus (L^A/X and S^A/X, in agriculture proper and livestock production, have been used). It has declined by about 8 percentage points in the first case and by about 9 percentage points in the second. In 1980-81 it stood at 41.5 to 44 percent of total output which came down to about 34

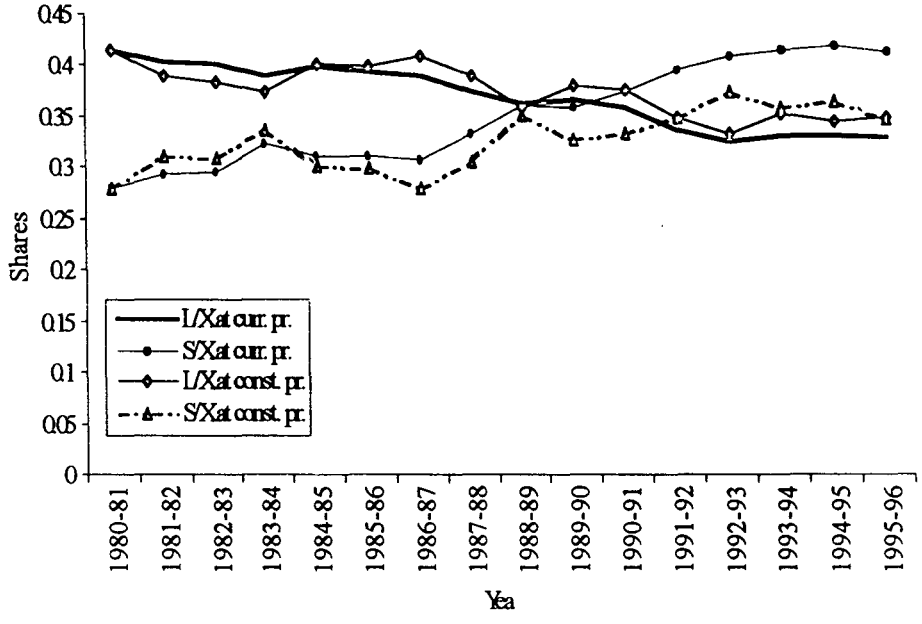

Figure 3.2: Shares of Total Labour Cost and Surplus in Total Output

to 36 percent by 1995-96. At constant prices this decline has been less steep; we find that it has decreased by about 5 to 7 percentage points to reach about 35 to 37 percent of total output. Its share in *NVA*, however, has declined significantly overtime. At current prices, it has declined by about 14 to 16 percentage points. In 1980-81 it stood at 60 to 63 percent which dropped down to about 45 to 47 percent by 1995-96. Once again at constant prices, the decline has been less marked, and the magnitude of decline has been restricted to about 7.5 to 10 percentage points reaching about 50 to 53 percent of total output.

Conversely, surplus has increased substantially over time. At constant prices its absolute value has almost doubled over the period of these sixteen years. For the agriculture sector as whole it has increased by over 80 percent. Surplus in agriculture proper and livestock production has actually doubled. The share of surplus in total output has risen sharply. At current prices, starting from 25 to 29 percent of total output in 1980-81 it has increased by 12 to 14 percentage points to reach 39 to 41 percent of total output in 1995-96. At constant prices, also, it has increased by 5 to 7 percentage points to reach 32 to 34 percentage of total output. The share of surplus in the *NVA* is unity less the share of the total labour cost. Thus there is an inverse

relation between the two shares. Extending the concept of the wage-profit frontier for a capitalist economy, we may here talk of a labour cost- surplus frontier for the not fully capitalist economy we are considering. As pointed out earlier, the share of the total labour cost in *NVA* has declined by about 15 percentage points reflecting the increase in the share of surplus of equal magnitude at current prices. At constant prices it has risen by 8 to 10 percentage points to reach half of the net value added, starting from about two-fifth of the former.

Net value added per unit of labour cost, reflecting the labour productivity (average) has increased substantially over the period. This increase is more marked at current price than at constant price estimates. In the beginning, the estimates show that, one rupee of labour value generated about Rs. 1.58 to 1.69 of net value added resulting in generation and appropriation of 58 to 69 paise of surplus. Over time increase in labour productivity has resulted in an increase in net value added per unit of labour cost. In 1995-96 one rupee of labour value yielded Rs.2.13 to 2.26 of net value added. Thus of one rupee of labour value yielded about Rs.1.13 to 1.26 of surplus value. Thus over this period there has been an increase in net value added and surplus generated of a magnitude of about 50 paise to every rupee. At constant prices, the magnitude of increase is smaller and for the agricultural sector as a whole. One rupee of labour value yielded about 25 paise more in 1995-96 than what was yielded in 1980-81. For agriculture proper and livestock production this increase was a little higher of about 30 paise. Therefore at current prices net value added per unit of labour cost increased roughly by one third, and at constant prices by one sixth. Surplus generation on the other hand doubled at current prices, and at constant prices it has increased by one half of the initial value.

An increase in net value added and surplus per unit of labour cost has been described above as indicating an increase in average labour productivity. This increase in labour productivity, however, should not be confused with a decrease in necessary labour time. In this case it is merely reflecting a decrease in the relative cost of production. Any increase in *NVA* per unit of labour cost can be obtained in two ways. First, by a reduction in necessary labour time, and secondly, by a lengthening of total working time (day). Increase in labour productivity, mentioned above, indicates

only the final result, i.e., an increase in net value added and surplus per unit of labour cost, and not the exact method by which this increase was realised.

Apart from the productivity of labour we may consider the productivity of labourer (worker) also and look into differences if any. At constant prices net value added per worker has increased by Rs. 225 to 300 over the period. There is considerable difference between alternative estimates. In 1980-81 these vary between about Rs. 2100 to Rs. 2600 for agriculture proper and livestock production. The increase is higher when only agriculture proper and livestock production are considered than the whole of the agricultural sector. Thus the overall increase measured for alternative estimates of *NVA* per worker has been about 9 to 12 per cent.

Alternative estimates of surplus per worker also show considerable differences from one another. In 1980-81 they range between Rs. 970 to Rs. 1130. Here also increase over time is higher for agriculture proper and livestock production, where it has increased by more than Rs. 350 to Rs. 420, than the agricultural sector as a whole in which case the magnitude of this increase is between Rs. 300 to 340, at constant prices. In terms of the rate of increase, it has been much higher than *NVA* per worker. Measured at constant prices, it has increased by 40 per cent in agriculture proper and livestock production and by 30 per cent in the agricultural sector taken as a whole.

Estimates of various component parts of surplus, i.e. rent, profit and interest show that it is predominantly in the form of profit that the surplus is appropriated. Share of rent is relatively insignificant, less than 3.5 per cent, and that of interest is also very small, less than 8.5 per cent in 1980-81. This definitely underestimates the share of rent, given the limitations of the primary data sources. The trend, however, shows that there is an overall decline, with fluctuations in between, in the shares of rent and interest in total surplus. Share of rent has declined by 0.5 to 1 percentage points to reach less than 2.5 per cent of total surplus. Share of interest, also, has declined over time and in 1995-96 it stood at around 5.5 per cent of total surplus registering a decline of 3 percentage points. The absolute magnitudes of rent and interest and their shares in total surplus are definitely underestimated, but their trends, however, clearly reflect an increase in the share of profits, which stood at around 92

per cent. This trend reflects the strengthening of those production relations, which yield profit as the main form of surplus appropriation.

Surplus and Poverty: A Closer View

What has been described above is the overall trend, over the period 1980-81 to 1995-96, of different variables. This gives a general idea about any increase or decrease or even stagnation in the values of different variables over the period under examination. In all cases, however, these overall trends contain marked fluctuations. A close observation reveals that there are certain periods during which, or particular years in which, values of different variables show quantum jump or substantial decline. In the following section these periods or years are identified and their special characteristics in terms of values of different variables are noted.

If we look upon the trends in net value added and total output in agriculture proper and livestock production at constant prices two years can be noticed to have had outstanding performance. Figure 3.3 below shows the annual rates of growth (over previous year) of output and *NVA*. In 1983-84 output rose by 9.3 per cent and *NVA* by more than 12 per cent. Once again in 1988-89, output registered an annual growth rate of 16 per cent and *NVA* increased by 18.5 per cent. *NVA* after registering a quantum jump in 1983-84 could not sustain itself and witnessed fluctuation after that till 1989-90 when another boost was experienced. This time, this level was maintained till 1990-91. In the next year 1991-92 it dropped by more than 3 per cent. The recovery set in from the next year but only to witness another substantial decline in 1995-96 when *NVA* dropped by more than 4 per cent.

In both these years with outstanding performance the share of *NVA* in total output also increased substantially, both at current and constant prices. Constancy in the share of material costs at about 30 per cent shows that the average productivity of all material inputs taken together has remained more or less stable. However, at current prices, it reflects a small increase. At constant prices, share of *NVA* after 1983-84 has continuously declined from 71 per cent to 68.75 per cent in 1986-87, after

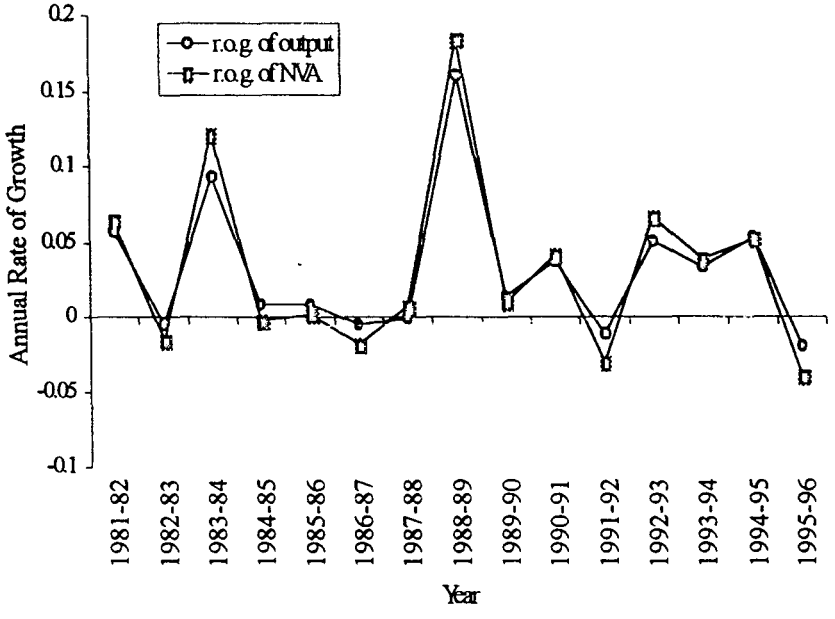

Figure 3.3 : Rate of Growth of Output and NV (at constant prices)

which it increased by about 2 percentage points till1990-91. In 1991-92 it dipped by more than 1.25 percentage points. It recovered after that only to have dropped once again in 1995-96.

If we turn to annual rate of growth of surplus we can see that it has witnessed a big leap in 1983-84 and again in 1988-89. Figure 3.4 below displays the annual rates of growth (over previous year) of surplus and total labour cost at constant prices. The estimates of L^4 and S^4 in agriculture proper and livestock production have been used in the diagram. In 1983-84 it increased by about 20 per cent and in 1988-89 by about 35 per cent. The annual rate of growth of the total labour cost, on the other hand, was only about 6.5 per cent in 1983-84 and 1988-89. It shows that the quantum jump experienced in total output in these two years was mostly accounted for by an increase in *NVA* and, this increase in turn was reflected in an increase in surplus, which means that this increase benefited mostly the property owners and workers could manage to have only a marginal benefit out of it. These two years have witnessed a decline in the share of labour cost and an increase in share of surplus in total output. Decline in the share of labour cost and increase in that of surplus in *NVA*

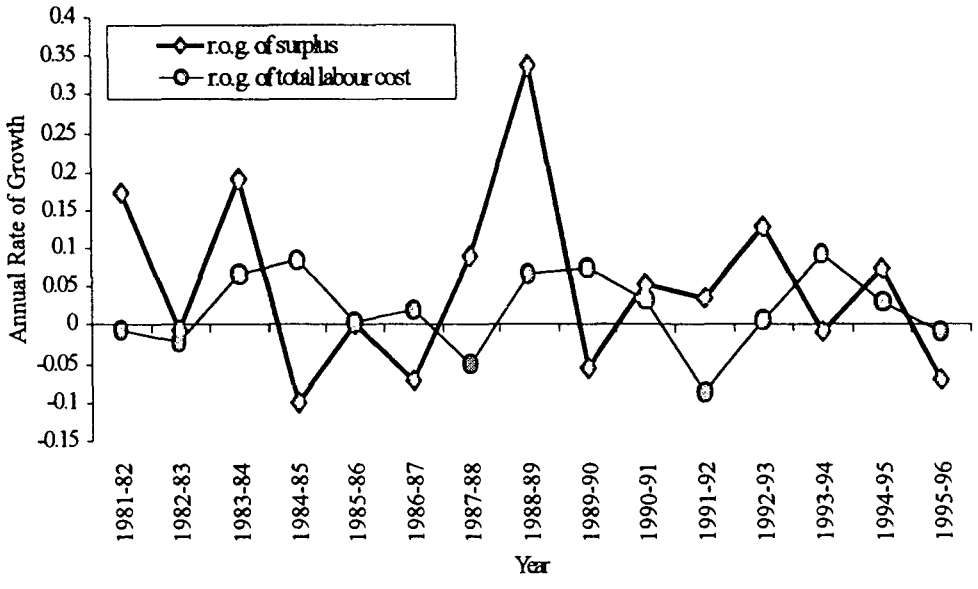

Figure 3.4: Annual Rate of Growth of Surplus and Total labour Cost (at constant prices)

was more marked. If we now turn to the years 1991-92 and 1995-96 during which total output at constant prices had declined as also the *NVA*, then we find that in 1991-92 surplus has actually increased by about 4 per cent. This reflects the fact that this decline had affected the workers most, as property-owning classes succeeded in maintaining the level of surplus – rather raised its level – despite a fall in the absolute value of total output and *NVA*. The result was very clear: return to labour i.e. the total labour cost at constant prices declined by about 9 per cent. in 1995-96, however, the decline was witnessed for both, the total labour cost as well as surplus. It was more marked for surplus this time where it declined by about 7 per cent as against a decline of 1 per cent in the total labour cost.

Thus it was observed that any substantial increase in total output in particular years benefited the property owning classes the most: at times this resulted in worsening of the situation of workers where the total labour cost at constant prices declined, raising the amount of surplus on a significant scale, as happened in 1981-82. This is true for all years witnessing annual growth rates of substantial magnitude. In cases of decline in total output and *NVA*, observations are mixed in nature. In 1984-85

and 1986-87, decline in *NVA* resulted in a decline in surplus only and the total labour cost increased, while in other cases of decline, both declined, though at different rates.

It has been observed that, as pointed out earlier also, there has been a general tendency of the share of the total labour cost in total output to decline and that of surplus to increase. But decrease or increase is not evenly distributed over time. The early eighties, till 1983-84, witnessed a continuous decline in the share of labour cost in total output at both current and constant prices, for agricultural sectors as a whole as well as agriculture proper and livestock production. There has been, after 1983-84, a gradual improvement in it, but only to decline again in the later part of the eighties. An improvement has been noticed in 1989-90. After this in the early nineties a substantial decline is found to have taken place. Over the period starting a from 1989-90 to 1992-93 the share of labour cost in total output has decreased buy almost 5 percentage points, i.e. about two fifths of total output to a little more than one third of total output. The complementary movement in the share of surplus has been equally substantial.

Similar trends can also be seen in the shares of the total labour cost and surplus in net value added, though with greater magnitudes of decrease or increase. Figure 3.5 below shows the share of surplus (S^4 in agriculture proper and livestock production) in the *NVA*. The share of total labour cost can be read from the same. In the early eighties till 1983-84, share of the total labour cost in *NVA* declined by about 7 percentage points to reach a little more than half of total *NVA*, estimated at constant prices. At current prices this decrease has been of a smaller magnitude. Also if the whole of the agriculture sector is considered this magnitude is smaller. A little improvement has been noticed during the mid-eighties. But in the early nineties, once again there was a substantial jump in the share of surplus and a decline in the share of the total labour cost. From 1989-90 to 1992-93 share of the total labour cost declined by about 7 percentage points to reach 48 to 50 per cent of *NVA*. This decline is of the same degree whether estimated at current or constant prices and is true for agricultural sector as a whole as well as agricultural proper and livestock production only. One point needs attention here: the two years 1983-85 and 1989-90, which break the trend of a continuous decline in the share of the total labour cost and witness significant improvement in these particular years, are over that immediately follow 1983-84 and

1988-89, the years which experienced quantum jump in total output and net value added. It may be said, however, with no precision, that the benefit of an increase in output and *NVA* was received by the workers with a time lag. But even this could not be sustained beyond 1986-87.

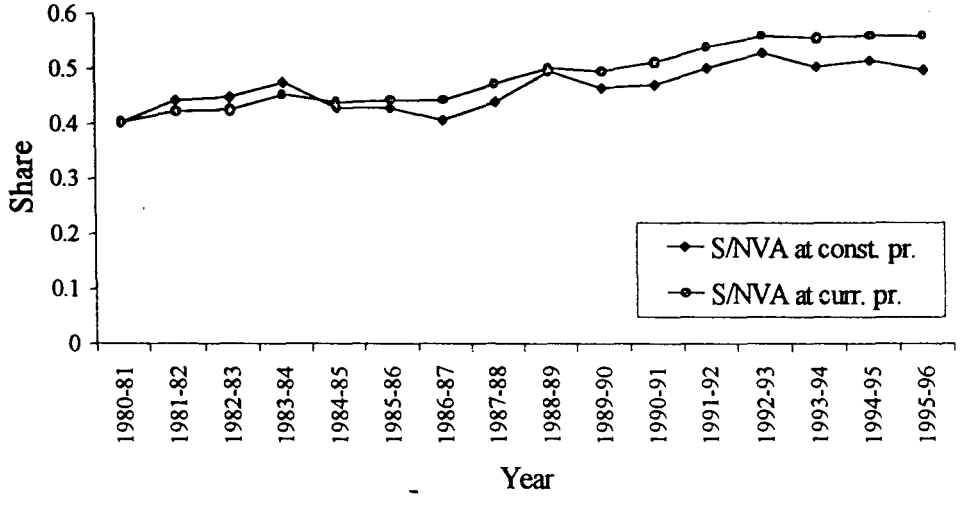

Figure 3.5: The Share of Surplus in the NVA

Figure 3.6 (using S^4 and L^4 in agriculture proper and livestock production) clearly reflects a substantial increase in surplus per unit of labour cost. It has already been mentioned that surplus extraction per unit of labour cost has increased by about 50-60 paise per rupee of labour cost at current prices and about 25-30 paise per rupee of labour cost at constant prices. The period from 1989-90 to 1992-93 once again remains distinct in this regard. The trend is fairly regular for this variable. But the amount of increase is significant in the early nineties, which accounts for about half of the overall increase at current prices, i.e. out of an overall increase of 50-60 paise the above mentioned period above accounted for half of it i.e. it increased by 25-30 paise. Constant price estimates show even stronger results. Out of an overall increase of about 25-30 paise per rupee of labour cost, this periods alone witnessed an increase of about 25 paise, i.e. almost an equal amount.

The trends in incomes of workers as against incomes of the property-owning classes will be clearer if the trends in net value added per worker and surplus per worker is considered. From Figure 3.7 (using S^4, W^3 and F^4 in agriculture and livestock production) two distinct phases can be easily identified. Net value added per worker at constant prices has decreased by about Rs. 250-300 from 1983-84 to

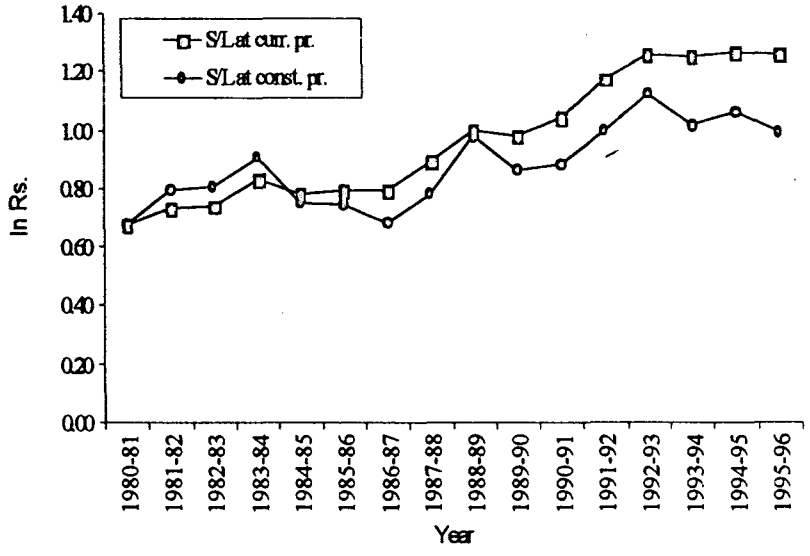

Figure 3.6: Surplus per Unit of Labour Cost

1987-88. In contrast to this, from 1991-92 to 1994-95 it has risen by about Rs. 220-275. Surplus per worker at constant prices has decreased in the first phase by Rs. 250-350. In the second phase from 1989-90 to 1992-93 it has increased by Rs. 175-200.

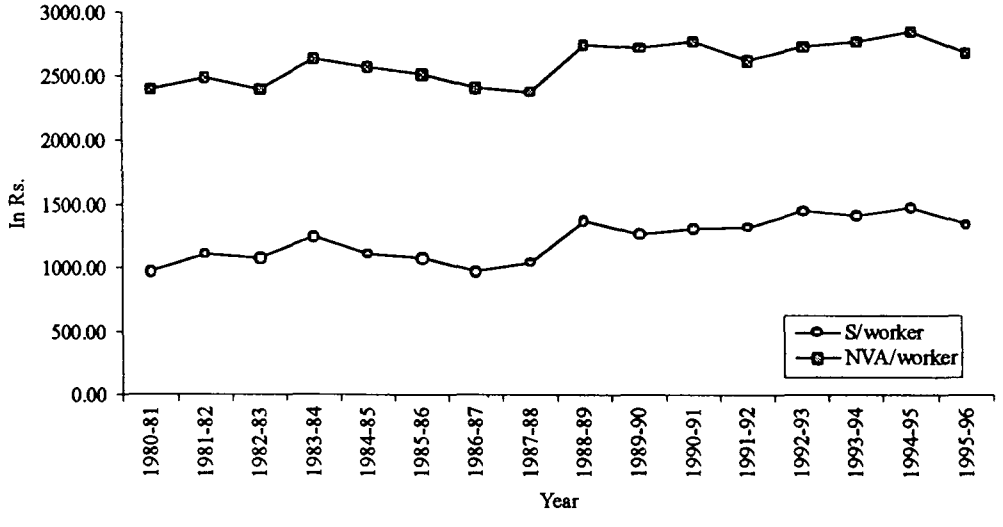

Figure 3.7: Surplus and NVA per Worker (at constant prices)

Prosperity in the rural agrarian economy measured in terms of growth, is supposed to improve the living conditions of peasants and workers. Our findings however, suggest that in the early nineties there is an adverse trend in incomes of workers, and it is primarily the property owning classes that have benefited. If relative poverty i.e. poverty ratio is taken to be an index representing the condition of the masses, consisting mostly of workers and small and marginal peasantry, then it has been observed that there is a close association between trends in surplus and rural poverty ratio during the nineties. Magnitudes of rank correlation coefficients suggest that surplus per worker, surplus per unit of labour cost, share of surplus in net value added, and that in total output are closely related to the incidence of poverty. The value of the Spearman's rank correlation coefficient for these variables are given in Table 3.1.[1]

Table 3.1: Degree of Association between Trends in Surplus and Rural Poverty

Explanatory Variable	Degree of association measured in terms of Spearman's rank correlation coefficient
Surplus per worker	0.7142858
Surplus per unit of labour cost	0.8285715
Share of surplus in total output	0.8285715
Share of surplus in *NVA*	0.8285715

Going by the results, it seems that, given a high degree of correlation between trends in surplus and rural poverty, the early nineties, witnessing a tendency of surplus inflation, has been a period during which the poverty scenario has worsened. In contrast to this period, in the eighties, till 1987-88, share of surplus in total output and *NVA* remained below 30 per cent and 43 per cent respectively. This shift must be understood in the light of other macroeconomic variables. The early nineties has witnessed a shift in development policy. In fact from the early eighties itself there has been a change, but the period after 1991 marks a distinct break with the inception of the New Economic Policy comprising of macro economic stabilisation and structural adjustment programmes. Contractionary fiscal policies of the government are centered

[1] . The detailed estimation exercise is presented in Appendix 3.1, at the end of this chapter.

to the whole package. Problems on the front of the external sector was sought to be dealt with by these contractionary fiscal policies. The period till 1992-93 is one during which these policies were pursued the most vigorously.

The worst affected sector is the social sector. Contractionary fiscal policies had already had an adverse impact on the level of aggregate demand, and consequently, on employment. Given the high man-land ratio in the rural economy and low potential for employment generation, employment scenario in rural economy worsened significantly. Moreover, reduced state expenditure on social sectors including employment generation programmes further accentuated the problem for the lower strata of the rural population. It has been observed that non-farm employment is an extremely effective means to increase the income of workers and small and marginal peasants. There are a number of empirical studies to show a close correlation (negative) between non-farm employment and rural poverty. Bardhan (1986) has worked it out for rural West Bengal, where he found a strong negative correlation between these two.[2] Thus contractionary fiscal policies resulting in decline is non-farm employment opportunities were bound to have adverse impact on the poverty scenario.

Furthermore, with the spread of the Green Revolution technology to regions other than North and North-Western regions, the political consolidation of rich farmers has also increased. They have been successful in pressing the successive governments to increase the procurement prices of agricultural produce, including foodgrains. An increase in the prices of agricultural products relative to non-agricultural products can be seen in the Table 3.2. This has coincided with an attempt on the part of the government to reduce current expenditures by reducing subsidies given under public distribution system. These two features of current macro economic scenario have certainly had impoverishing impacts for the lower strata of the agrarian economy.

In a particular kind of institutional setting, characterised by highly unequal distribution of land and other productive capital assets, even a growing agrarian economy may unleash negative forces on the rural poor. In fact such results have been found on several occasions.[3] A number of factors may be responsible for this. Rise in

[2] . Bardhan (1986), *Land Labour and Rural Poverty*, p. 194.
[3] . Ibid. Bardhan found a positive correlation between rate of growth in agricultural production and poverty of agricultural labour households in rural West Bengal, 1977-78.

Table 3.2: Index of Terms of Trade between Agricultural and Non-agricultural Sectors
Base: Triennium ending 1990-91

Year	Index of Prices Received (IPR)	Index of Prices Paid* (IPP)	Index of Terms of Trade (ITT)
1981-82	54.9	61.9	88.7
1982-83	60.3	66	91.4
1983-84	64.2	70.1	91.6
1984-85	68	72.4	93.9
1985-86	70.4	75.2	93.6
1986-87	76.7	80.2	95.6
1987-88	86	88.3	97.4
1988-89	90.3	91.8	98.4
1989-90	97.5	98.1	99.4
1990-91	112.3	110.2	101.9
1991-92	130.8	123.8	105.7
1992-93	138.7	133.5	103.9
1993-94	151.4	146.1	103.6
1994-95	171.1	160.5	106.6
1995-96	182.9	173.9	105.2

Source: Directorate of Economics and Statistics, Department of Agriculture and Cooperation, Ministry of Agriculture.

* This is the combined index of prices paid for final consumption, intermediate consumption and capital formation.

the prices of foodgrains, labour displacing technological change, increase in labour supply resulting from eviction of tenants by landlords due to increased profitability which, as we have seen, has increased over time, ruining of village cottage/traditional industries. Also, increased monetisation of farm inputs and increasing dependence on privately controlled irrigation facilities simultaneously with the concentration of monetary resources to purchase these inputs has resulted in a situation where the smaller and marginal peasantry is being continuously forced out of cultivation and pushed into the swelling ranks of the labour force. In the light of these features, it becomes necessary to increase non-farm employment opportunities for the continuously increasing labour force to have any significant impact on rural poverty.

APPENDIX 3.1

ASSOCIATION BETWEEN SURPLUS AND RURAL POVERTY

The estimates of rural poverty ratio are taken from different rounds of National Sample survey. The explanatory variables are taken to be surplus per workers, surplus per unit of labour cost, share of surplus in total output, and share of surplus in not value added, all at constant prices. Alternative estimates of these different variables show exactly similar trends, therefore, choice of these alternative estimates will have no effect on final results.

First, the estimates of rural poverty and explanatory variables are presented in the following table:

Appendix Table 1.1: Rural Poverty and Surplus

Year	NSS Round	Rural poverty ratio	Surplus per worker S^4/W^3+F^4	Surplus per unit of labour cost S^4/L^4	Share of surplus in total output (%) S^4/X_{al}	Share of surplus in NVA (%) S^4/NVA_{al}
1989-90	45	33.7	1122.13	0.86	32.59	46.27
1990-91	46	35.04	1157.02	0.88	33.12	46.82
1992	48	41.7	1293.31	1.12	37.29	52.89
1993-94	50	37.27	1252.13	1.02	35.71	50.41
1994-95	51	38.03	1314.44	1.06	36.39	51.45
1995-96	52	38.29	1194.29	0.99	34.50	49.82

Source: Column 3 from Household consumption sruvey, NSSO, GoI.

Note: Months covered under different rounds of survey may be different and also periods for which estimates of different explanatory variables are given may not completely overlap with the former.

Ranks of these variables can now be written as:

Poverty	$S^4/(W^3+F^4)$	S^4/L^4	S^4/X	S^4/NVA
1	2	3	4	5
1	1	1	1	1
2	2	2	2	2
6	5	6	6	6
3	4	4	4	4
4	6	5	5	5
5	3	3	3	3

Differences between ranks, d_i where i $1,2,...,6$; can be tabled by getting the values of d_i, as:

$d_{2i} = rank_1 \quad rank_2$

where $rank_1$: rank of poverty ratio, and

$rank_2$: rank of surplus per worker.

Similarly,

$d_{3i} = rank_1 \quad rank_3$

$d_{4i} = rank_1 \quad rank_4$

$d_{5i} = rank_1 \quad rank_5$

where $rank_3$: ranks of variable S/L, and

$rank_4$: ranks of variable S/X, and

$rank_5$: ranks of variable S/NVA

Values of d_{ji} and d_{ji}^2 where $i=1,2,...,6$ and $j=2,3,4,5$ can now be tabled.

d_{2i}	d_{2i}^2	d_{3i}	d_{3i}^2	d_{4i}	d_{4i}^2	d_{5i}	d_{5i}^2
0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0
1	1	0	0	0	0	0	0
-1	1	-1	1	-1	1	-1	1
-2	4	-1	1	-1	1	-1	1
2	4	2	4	2	4	2	4
	$\sum d_{2i}^2 = 10$		$\sum d_{3i}^2 = 6$		$\sum d_{4i}^2 = 6$		$\sum d_{5i}^2 = 6$

Spearman's rank correlation coefficient $r = 1 - \frac{6\sum d_i^2}{n(n^2 - 1)}$

Where n: number of observations.

Therefore, for surplus per worker:

$$\sum d_i^2 = 10$$

$$r = 1 - \frac{6 \times 10}{6(6^2 - 1)} = 1 - \frac{60}{6 \times 35} = 0.7142858$$

For surplus per unit of labour cost:

$$\sum d_i^2 = 6$$

$$r = 1 - \frac{6 \times 6}{210} = 0.8285715$$

For share of surplus in total output:

$$\sum d_i^2 = 6$$

$$r = 1 - \frac{6 \times 6}{210} = 0.8285715$$

For share of surplus in NVA:

$$\sum d_i^2 = 6$$

$$r = 1 - \frac{6 \times 6}{210} = 0.8285715$$

These results can be summarized as:

Explanatory variable	Degree of association (Spearman's rank correlation coefficient)
Surplus per worker	0.7142858
Surplus per unit of labour cost	0.8285715
Share of surplus in total output	0.8285715
Share of surplus in net value added	0.8285715

All these values of rank correlation coefficient show that there is a close association between all the four explanatory variables and the rural poverty ratio.

Appendix 3.2

Appendix Table 2.1(a): Imputed Value of Family Labour (at current prices)

year	No. of agri. labourers (main only) (W^1)	Annual Wage-bill (in Rs. crores) (L_w)	Wage cost per agri. labourer. (in Rs.) L_w/W^1	No. of cultivators* (main only) (F^1)	Imputed Value of Family Labour (in Rs. crores) (L_f^1)
1980-81	55499602	9727	1752.63	97515484	17090.81
1981-82	57165427	10667	1865.99	99286303	18526.7
1982-83	58881252	11312	1921.15	101089279	19420.82
1983-84	60648577	13205	2177.3	102924995	22409.83
1984-85	62468949	14589	2335.4	104794048	24473.6
1985-86	64343959	15650	2432.24	106697040	25951.29
1986-87	66275248	16716	2522.21	108634590	27399.91
1987-88	68264505	17962	2631.24	110607325	29103.39
1988-89	70313470	21534	3062.57	112615884	34489.41
1989-90	72423934	24078	3324.59	114660916	38120.07
1990-91	74597744	27511	3687.91	116743085	43053.84
1991-92	76836801	30635	3987.02	118863065	47390.96
1992-93	79143064	33113	4183.94	121021542	50634.71
1993-94	81518549	38979	4781.61	123219216	58918.64
1994-95	83965335	45197	5382.82	125456798	67531.09
1995-96	86485561	48691	5629.96	127735013	71914.26

* including those engaged in livestock, forestry & logging, fisheries, plantation, etc.
Note: Superscripts denote the two methods of determining the composition of marginal workers - one, on the basis of percentage change in proportion, and secondly, on the basis of decadal growth rates.

Appendix Table 2.1(b): Imputed Value of family labour (at constant prices)

year	No. of agri. labourers (main only) (W^1)	Annual Wage-bill (in Rs. crores) (L_w)	Wage cost per agri. labourer. (in Rs.) L_w/W^1	No. of cultivators* (main only) (F^1)	Imputed Value of Family Labour (in Rs. crores) (L_f^1)
1980-81	55499602	9727	1752.63	97515484	17090.81
1981-82	57165427	9738.4	1703.55	99286303	16913.89
1982-83	58881252	9618.73	1633.58	101089279	16513.75
1983-84	60648577	10346.45	1705.97	102924995	17558.66
1984-85	62468949	11365.53	1819.39	104794048	19066.1
1985-86	64343959	11533.06	1792.41	106697040	19124.46
1986-87	66275248	11828.45	1784.75	108634590	19388.52
1987-88	68264505	11302.24	1655.65	110607325	18312.7
1988-89	70313470	12164.93	1730.1	112615884	19483.66
1989-90	72423934	13095.61	1808.19	114660916	20732.86
1990-91	74597744	13556.63	1817.3	116743085	21215.69
1991-92	76836801	12442.62	1619.36	118863065	19248.17
1992-93	79143064	12621.82	1594.81	121021542	19300.65
1993-94	81518549	13899.22	1705.04	123219216	21009.35
1994-95	83965335	14408.08	1715.96	125456798	21527.84
1995-96	86485561	14430.88	1668.59	127735013	21313.72

* including those engaged in livestock, forestry & logging, fisheries, plantation, etc.

Appendix Table 2.2(a): Imputed Value of family labour (at current prices)

year	No. of agri. labourers (main only) (W^2)	Annual Wage-bill (in Rs. crores) (L_w)	Wage cost per agri. labourer (in Rs.) L_w/W^2	No. of cultivators* (main only) (F^2)	Imputed Value of Family Labour (in Rs. crores) (L_f^2)
1980-81	64363620	9727	1511.26	108312213	16368.76
1981-82	66289646	10667	1609.15	110269564	17744.03
1982-83	68273306	11312	1656.87	112262288	18600.4
1983-84	70316326	13205	1877.94	114291023	2146.32
1984-85	72420481	14589	2014.49	116356419	23439.83
1985-86	74587601	15650	2098.2	118459141	24855.14
1986-87	76819571	16716	2176	120599861	26242.63
1987-88	79118330	17962	2270.27	122779267	27874.21
1988-89	81485877	21534	2642.67	124998058	33032.82
1989-90	83924272	24078	2869.02	127256946	36510.21
1990-91	86435633	27511	3182.83	129556655	41235.69
1991-92	89022145	30635	3441.28	131897923	45389.75
1992-93	91686055	33113	3611.56	134281501	48496.62
1993-94	94429681	38979	4127.83	136708153	56430.85
1994-95	97255408	45197	4647.25	139178658	64679.77
1995-96	100165692	48691	4861.05	141693809	68878.01

* including those engaged in livestock, forestry & logging, fisheries, plantation, etc.

Appendix Table 2.2(b): Imputed Value of family labour (at constant prices)

year	No. of agri. labourers (main only) (W^2)	Annual Wage-bill (in Rs. crores) (L_w)	Wage cost per agri. labourer (in Rs.) L_w/W^2	No. of cultivators* (main only) (F^2)	Imputed Value of Family Labour (in Rs. crores) (L_f^2)
1980-81	64363620	9727	1511.26	108312213	16368.76
1981-82	66289646	9738.4	1469.07	110269564	16199.35
1982-83	68273306	9618.73	1408.86	112262288	15816.14
1983-84	703163256	10346.45	1471.41	114291023	1681.69
1984-85	72420481	11365.53	1569.38	116356419	18260.74
1985-86	74587601	11533.06	1546.24	118459141	18316.67
1986-87	76819571	11828.45	1539.77	120599861	18569.61
1987-88	79118330	11302.24	1428.52	122779267	17539.31
1988-89	81485877	12164.93	1492.89	124998058	18660.8
1989-90	83924272	13095.61	1560.41	127256946	19857.28
1990-91	86435633	13556.63	1568.41	129556655	20319.76
1991-92	89022145	12442.62	1397.7	131897923	18435.36
1992-93	91686055	12621.82	1376.64	134281501	18485.66
1993-94	94429681	13899.22	1471.91	136708153	20122.25
1994-95	97255408	14408.08	1481.47	139178658	20618.88
1995-96	100165692	14430.88	1440.7	141693809	20413.84

* including those engaged in livestock, forestry & logging, fisheries, plantation, etc.

Appendix Table 2.3(a): Imputed Value of family labour (at current prices)

year	No. of agri. labourers (main only) (W^3)	Annual Wage-bill (in Rs. crores) (L_w)	Wage cost per agri. labourer. (in Rs.) L_w/W^3	No. of cultivators* (main only) (F^3)	Imputed Value of Family Labour (in Rs. crores) (L_f^3)
1980-81	64363620	9727	1511.26	108312213	16368.76
1981-82	66295490	10667	1609.01	110278970	17743.98
1982-83	68285345	11312	1656.58	112281439	18600.3
1983-84	70334926	13205	1877.45	114320270	21463.01
1984-85	72446025	14589	2013.78	116396122	23439.56
1985-86	74620488	15650	2097.28	118509668	24854.79
1986-87	76860217	16716	2174.86	120661592	26242.1
1987-88	79167172	17962	2268.87	122852591	27873.65
1988-89	81543370	21534	2640.8	125083375	33032.06
1989-90	83990889	24078	2866.74	127354666	36509.27
1990-91	86511871	27511	3180.03	129667200	41234.51
1991-92	89108520	30635	3437.94	132021725	45388.31
1992-93	91783107	33113	3607.74	134419004	48494.94
1993-94	94537971	38979	4123.11	136859814	56428.74
1994-95	97375523	45197	4641.52	139344944	64677.17
1995-96	100298243	48691	4854.62	141875199	68875.04

* including those engaged in livestock, forestry & logging, fisheries, plantation, etc.

Appendix Table 2.3(b): Imputed Value of family labour (at constant prices)

Year	No. of agri. labourers (main only) (W^3)	Annual Wage-bill (in Rs. crores) (L_w)	Wage cost per agri. Labourer. (in Rs.) L_w/W^3	No. of cultivators* (main only) (F^3)	Imputed Value of Family Labour (in Rs. crores) (L_f^3)
1980-81	64363620	9727	1511.26	108312213	16368.76
1981-82	66295490	9738.4	1468.94	110278970	16199.3
1982-83	68285345	9618.73	1408.61	112281439	15816.05
1983-84	70334926	10346.45	1471.03	114320270	16816.8
1984-85	72446025	11365.53	1568.83	116396122	18260.53
1985-86	74620488	11533.06	1545.56	118509668	18316.41
1986-87	76860217	11828.45	1538.96	120661592	18569.29
1987-88	79167172	11302.24	1427.64	122852591	17538.96
1988-89	81543370	12164.93	1491.84	125083375	18660.38
1989-90	83990889	13095.61	1559.17	127354666	19856.77
1990-91	86511871	13556.63	1567.02	129667200	20319.17
1991-92	89108520	12442.62	1396.34	132021725	18434.78
1992-93	91783107	12621.82	1375.18	134419004	18485.02
1993-94	94537971	13899.22	1470.23	136859814	20121.5
1994-95	97375523	14408.08	1479.64	139344944	20618.05
1995-96	100298243	14430.88	1438.8	141875199	20412.96

* including those engaged in livestock, forestry & logging, fisheries, plantation, etc.

Appendix Table 2.4(a): Net value added and produce at the disposal of cultivators (in Rs. crores at current prices)

Year	Gross value of output of the agri. sector (X)	Total material costs of production (M)	Net value added n the agri. sector NVA=X-M	Wage cost in the agri.sector (L_w)	Part of the produce at the disposal of cultivators ($NV-L_w$)
1980-81	62330	18243	44087	9727	34360
1981-82	69741	20325	49416	10667	38749
1982-83	73648	21401	52247	11312	40935
1983-84	87259	24270	62989	13205	49784
1984-85	93196	26194	67002	14589	52413
1985-86	100260	28720	71540	15650	55890
1986-87	107576	31433	76143	16716	59427
1987-88	119799	34139	85660	17962	67698
1988-89	147199	39870	107329	21534	85795
1989-90	162548	43268	119280	24078	95202
1990-91	188613	49322	139291	27511	111780
1991-92	220306	57953	162353	30635	131718
1992-93	244945	63907	181038	33113	147925
1993-94	280687	70211	210476	38979	171497
1994-95	323737	79897	243840	45197	198643
1995-96	347601	88513	259088	48691	210397

Appendix Table 2.4(b): Net value added and produce at the disposal of cultivators (in Rs. crores, at constant prices)

Year	Gross value of utput of the agri. sector (X)	Total material costs of production (M)	Net value added n the agri. sector NVA=X-M	Wage cost in the agri.sector (L_w)	Part of the produce at the disposal of cultivators ($NV-L_w$)
1980-81	62330	18243	44087	9727	34360
1981-82	65441	18964	46477	9738.4	36738.6
1982-83	64860	19284	45576	9618.73	35957.27
1983-84	70466	19820	50646	10346.45	40299.55
1984-85	71097	20528	50569	11365.53	39203.47
1985-86	71632	21000	50632	11533.06	39098.94
1986-87	71198	21537	49661	11828.45	37832.55
1987-88	71053	21184	49869	11302.24	38566.76
1988-89	82488	23545	58943	12164.93	46778.07
1989-90	84037	24177	59860	13095.61	46764.39
1990-91	86959	24834	62125	13556.63	48568.37
1991-92	86003	25583	60420	12442.62	47977.38
1992-93	90107	25999	64108	12621.82	51486.18
1993-94	93055	26595	66460	13899.22	52560.78
1994-95	97929	28113	69816	14408.08	55407.92
1995-96	96250	28986	67264	14430.88	52833.12

Appendix Table 2.5(a): Surplus (in Rs. crores, at current prices)

year	Net value added in the agri sector NVA=X-M	Imputed value of family lab. (L_f^1)	Imputed value of family lab. (L_f^2)	Imputed value of family lab. (L_f^3)	Surplus (S^1)	Surplus (S^2)	Surplus (S^3)
1980-81	44087	17090.81	16368.76	16368.76	17269.19	17991.24	17991.24
1981-82	49416	18526.7	17744.03	17743.98	20222.3	21004.97	21005.02
1982-83	52247	19420.82	18600.4	18600.3	21514.18	22334.6	22334.7
1983-84	62989	22409.83	2146.32	21463.01	27374.17	47637.68	28320.99
1984-85	67002	24473.6	23439.83	23439.56	27939.4	28973.17	28973.44
1985-86	71540	25951.29	24855.14	24854.79	29938.71	31034.86	31035.21
1986-87	76143	27399.91	26242.63	26242.1	32027.09	33184.37	33184.83
1987-88	85660	29103.39	27874.21	27873.65	38594.61	39823.79	39824.35
1988-89	107329	34489.41	33032.82	33032.06	51305.59	52762.18	52762.94
1989-90	119280	38120.07	36510.21	36509.27	57081.93	58691.79	58692.73
1990-91	139291	43053.84	41235.69	41234.51	68726.16	70544.31	70545.49
1991-92	162353	47390.96	45389.75	45388.31	84327.04	86328.25	86329.69
1992-93	181038	50634.71	48496.62	48494.94	97290.29	99428.38	99430.06
1993-94	210476	58918.64	56430.85	56428.74	112578.36	115066.15	115068.2
1994-95	243840	67531.09	64679.77	64677.17	131111.91	133963.23	133965.8
1995-96	259088	71914.26	68878.01	68875.04	138482.74	141518.99	141521.9

Appendix Table 2.5(b): Surplus (in Rs. crores, at constant prices)

year	Net value added in the agri sector NVA=X-M	Imputed value of family lab. (L_f^1)	Imputed value of family lab. (L_f^2)	Imputed value of family lab. (L_f^3)	Surplus (S^1)	Surplus (S^2)	Surplus (S^3)
1980-81	44087	17090.81	16368.76	16368.76	17269.19	17991.24	17991.24
1981-82	46477	16913.89	16199.35	16199.3	19824.71	20539.25	20539.3
1982-83	45576	16513.75	15816.14	15816.05	19443.52	20141.13	20141.22
1983-84	50646	17558.66	1681.69	16816.8	22740.89	38617.86	23482.75
1984-85	50569	19066.1	18260.74	18260.53	20137.37	20942.73	20942.94
1985-86	50632	19124.46	18316.67	18316.41	19974.47	20782.26	20782.53
1986-87	49661	19388.52	18569.61	18569.29	18444.03	19262.94	19263.26
1987-88	49869	18312.7	17539.31	17538.96	20254.01	21027.44	21027.8
1988-89	58943	19483.66	18660.8	18660.38	27294.41	28117.27	28117.7
1989-90	59860	20732.86	19857.28	19856.77	26031.53	26907.1	26907.62
1990-91	62125	21215.69	20319.76	20319.17	27352.69	28248.62	28249.2
1991-92	60420	19248.17	18435.36	18434.78	28729.22	29542.02	29542.61
1992-93	64108	19300.65	18485.66	18485.02	32185.53	33000.51	33001.15
1993-94	66460	21009.35	20122.25	20121.5	31551.43	32438.53	32439.28
1994-95	69816	21527.84	20618.88	20618.05	33880.08	34789.03	34789.86
1995-96	67264	21313.72	20413.84	20412.96	31519.4	32419.27	32420.15

Appendix Table 2.6(a): Share of material costs, labour costs and surplus in gross value of output (at current prices, values in Rs. crores)

Year	ross value of output of the agri sector (X)	Total material costs (M)	Total labour cost $L^1=L_w+L_f^1$	Surplus (S^1)	Share of material costs (M*)	Share of labour cost (L^1*)	Share of surplus (S^1*)
1980-81	62330	18243	26817.81	17269.19	0.2927	0.4303	0.2771
1981-82	69741	20325	29193.70	20222.30	0.2914	0.4186	0.2900
1982-83	73648	21401	30732.82	21514.18	0.2906	0.4173	0.2921
1983-84	87259	24270	35614.83	27374.17	0.2781	0.4082	0.3137
1984-85	93196	26194	39062.60	27939.40	0.2811	0.4191	0.2998
1985-86	100260	28720	41601.29	29938.71	0.2865	0.4149	0.2986
1986-87	107576	31433	44115.91	32027.09	0.2922	0.4101	0.2977
1987-88	119799	34139	47065.39	38594.61	0.2850	0.3929	0.3222
1988-89	147199	39870	56023.41	51305.59	0.2709	0.3806	0.3485
1989-90	162548	43268	62198.07	57081.93	0.2662	0.3826	0.3512
1990-91	188613	49322	70564.84	68726.16	0.2615	0.3741	0.3644
1991-92	220306	57953	78025.96	84327.04	0.2631	0.3542	0.3828
1992-93	244945	63907	83747.71	97290.29	0.2609	0.3419	0.3972
1993-94	280687	70211	97897.64	112578.36	0.2501	0.3488	0.4011
1994-95	323737	79897	112728.09	131111.91	0.2468	0.3482	0.4050
1995-96	347601	88513	120605.26	138482.74	0.2546	0.3470	0.3984

Appendix Table 2.6(b): Share of material costs, labour costs and surplus in gross value of output (at constant prices, values in Rs. crores)

year	ross value of output of the agri sector (X)	Total material costs (M)	Total labour cost $L^1=L_w+L_f^1$	Surplus (S^1)	Share of material costs (M*)	Share of labour cost (L^1*)	Share of surplus (S^1*)
1980-81	62330	18243	26817.81	17269.19	0.2927	0.4303	0.2771
1981-82	65441	18964	26652.29	19824.71	0.2898	0.4073	0.3029
1982-83	64860	19284	26132.48	19443.52	0.2973	0.4029	0.2998
1983-84	70466	19820	27905.11	22740.89	0.2813	0.3960	0.3227
1984-85	71097	20528	30431.63	20137.37	0.2887	0.4280	0.2832
1985-86	71632	21000	30657.52	19974.47	0.2932	0.4280	0.2788
1986-87	71198	21537	31216.97	18444.03	0.3025	0.4385	0.2591
1987-88	71053	21184	29614.94	20254.01	0.2981	0.4168	0.2851
1988-89	82488	23545	31648.59	27294.41	0.2854	0.3837	0.3309
1989-90	84037	24177	33828.47	26031.53	0.2877	0.4025	0.3098
1990-91	86959	24834	34772.32	27352.69	0.2856	0.3999	0.3145
1991-92	86003	25583	31690.79	28729.22	0.2975	0.3685	0.3340
1992-93	90107	25999	31922.47	32185.53	0.2885	0.3543	0.3572
1993-94	93055	26595	34908.57	31551.43	0.2858	0.3751	0.3391
1994-95	97929	28113	35935.92	33880.08	0.2871	0.3670	0.3460
1995-96	96250	28986	35744.6	31519.4	0.3012	0.3714	0.3275

Appendix Table 2.7(a): Share of material costs, labour costs and surplus in gross value of output (at current prices, values in Rs. crores)

year	ross value of output of the agri sector (X)	Total material costs (M)	Total labour cost $L^2=L_w+L_f^2$	Surplus (S^2)	Share of material costs (M*)	Share of labour cost (L^{2*})	Share of surplus (S^{2*})
1980-81	62330	18243	26095.76	17991.24	0.2927	0.4187	0.2886
1981-82	69741	20325	28411.03	21004.97	0.2914	0.4074	0.3012
1982-83	73648	21401	29912.4	22334.6	0.2906	0.4062	0.3033
1983-84	87259	24270	15351.32	47637.68	0.2781	0.1759	0.5459
1984-85	93196	26194	38028.83	28973.17	0.2811	0.4081	0.3109
1985-86	100260	28720	40505.14	31034.86	0.2865	0.4040	0.3095
1986-87	107576	31433	42958.63	33184.37	0.2922	0.3993	0.3085
1987-88	119799	34139	45836.21	39823.79	0.2850	0.3826	0.3324
1988-89	147199	39870	54566.82	52762.18	0.2709	0.3707	0.3584
1989-90	162548	43268	60588.21	58691.79	0.2662	0.3727	0.3611
1990-91	188613	49322	68746.69	70544.31	0.2615	0.3645	0.3740
1991-92	220306	57953	76024.75	86328.25	0.2631	0.3451	0.3919
1992-93	244945	63907	81609.62	99428.38	0.2609	0.3332	0.4059
1993-94	280687	70211	95409.85	115066.15	0.2501	0.3399	0.4099
1994-95	323737	79897	109876.77	133963.23	0.2468	0.3394	0.4138
1995-96	347601	88513	117569.01	141518.99	0.2546	0.3382	0.4071

Appendix Table 2.7(b): Share of material costs, labour costs and surplus in gross value of output (at constant prices, values in Rs. crores)

year	ross value of output of the agri sector (X)	Total material costs (M)	Total labour cost $L^2=L_w+L_f^2$	Surplus (S^2)	Share of material costs (M*)	Share of labour cost (L^{2*})	Share of surplus (S^{2*})
1980-81	62330	18243	26095.76	17991.24	0.2927	0.4187	0.2886
1981-82	65441	18964	25937.75	20539.25	0.2898	0.3964	0.3139
1982-83	64860	19284	25434.87	20141.13	0.2973	0.3922	0.3105
1983-84	70466	19820	12028.14	38617.86	0.2813	0.1707	0.5480
1984-85	71097	20528	29626.27	20942.73	0.2887	0.4167	0.2946
1985-86	71632	21000	29849.73	20782.26	0.2932	0.4167	0.2901
1986-87	71198	21537	30398.06	19262.94	0.3025	0.4270	0.2706
1987-88	71053	21184	28841.55	21027.44	0.2981	0.4059	0.2959
1988-89	82488	23545	30825.73	28117.27	0.2854	0.3737	0.3409
1989-90	84037	24177	32952.89	26907.1	0.2877	0.3921	0.3202
1990-91	86959	24834	33876.39	28248.62	0.2856	0.3896	0.3248
1991-92	86003	25583	30877.98	29542.02	0.2975	0.3590	0.3435
1992-93	90107	25999	31107.48	33000.51	0.2885	0.3452	0.3662
1993-94	93055	26595	34021.47	32438.53	0.2858	0.3656	0.3486
1994-95	97929	28113	35026.96	34789.03	0.2871	0.3577	0.3552
1995-96	96250	28986	34844.72	32419.27	0.3012	0.3620	0.3368

Appendix Table 2.8(a): Share of material costs, labour costs and surplus in gross value of output (at current prices, values in Rs. crores)

year	ross value of output of the agri sector (X)	Total material costs (M)	Total labour cost $L^3=L_w+L_f^3$	Surplus (S^3)	Share of material costs (M*)	Share of labour cost (L^{3*})	Share of surplus (S^{3*})
1980-81	62330	18243	26095.76	17991.24	0.2927	0.4187	0.2886
1981-82	69741	20325	28410.98	21005.02	0.2914	0.4074	0.3012
1982-83	73648	21401	29912.3	22334.7	0.2906	0.4062	0.3033
1983-84	87259	24270	34668.01	28320.99	0.2781	0.3973	0.3246
1984-85	93196	26194	38028.56	28973.44	0.2811	0.4080	0.3109
1985-86	100260	28720	40504.79	31035.21	0.2865	0.4040	0.3095
1986-87	107576	31433	42958.1	33184.83	0.2922	0.3993	0.3085
1987-88	119799	34139	45835.65	39824.35	0.2850	0.3826	0.3324
1988-89	147199	39870	54566.06	52762.94	0.2709	0.3707	0.3584
1989-90	162548	43268	60587.27	58692.73	0.2662	0.3727	0.3611
1990-91	188613	49322	68745.51	70545.49	0.2615	0.3645	0.3740
1991-92	220306	57953	76023.31	86329.69	0.2631	0.3451	0.3919
1992-93	244945	63907	81607.94	99430.06	0.2609	0.3332	0.4059
1993-94	280687	70211	95407.74	115068.26	0.2501	0.3399	0.4100
1994-95	323737	79897	109874.17	133965.83	0.2468	0.3394	0.4138
1995-96	347601	88513	117566.04	141521.96	0.2546	0.3382	0.4071

Appendix Table 2.8(b): Share of material costs, labour costs and surplus in gross value of output (at constant prices, values in Rs. crores)

year	ross value of output of the agri sector (X)	Total material costs (M)	Total labour cost $L^3=L_w+L_f^3$	Surplus (S^3)	Share of material costs (M*)	Share of labour cost (L^{3*})	Share of surplus (S^{3*})
1980-81	62330	18243	26095.76	0.2927	0.4187	0.2886	0.2886
1981-82	65441	18964	25937.7	0.2898	0.3964	0.3139	0.3139
1982-83	64860	19284	25434.78	0.2973	0.3921	0.3105	0.3105
1983-84	70466	19820	27163.25	0.2813	0.3855	0.3332	0.3332
1984-85	71097	20528	29626.06	0.2887	0.4167	0.2946	0.2946
1985-86	71632	21000	29849.47	0.2932	0.4167	0.2901	0.2901
1986-87	71198	21537	30397.74	0.3025	0.4269	0.2706	0.2706
1987-88	71053	21184	28841.2	0.2981	0.4059	0.2959	0.2959
1988-89	82488	23545	30825.31	0.2854	0.3737	0.3409	0.3409
1989-90	84037	24177	32952.38	0.2877	0.3921	0.3202	0.3202
1990-91	86959	24834	33875.8	0.2856	0.3896	0.3249	0.3249
1991-92	86003	25583	30877.4	0.2975	0.3590	0.3435	0.3435
1992-93	90107	25999	31106.84	0.2885	0.3452	0.3662	0.3662
1993-94	93055	26595	34020.72	0.2858	0.3656	0.3486	0.3486
1994-95	97929	28113	35026.13	0.2871	0.3577	0.3553	0.3553
1995-96	96250	28986	34843.84	0.3012	0.3620	0.3368	0.3368

Appendix Table 2.9(a): Net value added as a percentage of gross output and material and total labour cost as a percentage of net value added (at current prices)

Year	Net value added as a percentage of total output NVA/X	Labour cost as a proportion of NVA L^1/NVA	Surplus as a proportion of NVA S^1/NVA
1980-81	0.7073	0.6083	0.3917
1981-82	0.7086	0.5908	0.4092
1982-83	0.7094	0.5882	0.4118
1983-84	0.7219	0.5654	0.4346
1984-85	0.7189	0.5830	0.4170
1985-86	0.7135	0.5815	0.4185
1986-87	0.7078	0.5794	0.4206
1987-88	0.7150	0.5494	0.4506
1988-89	0.7291	0.5220	0.4780
1989-90	0.7338	0.5214	0.4786
1990-91	0.7385	0.5066	0.4934
1991-92	0.7369	0.4806	0.5194
1992-93	0.7391	0.4626	0.5374
1993-94	0.7499	0.4651	0.5349
1994-95	0.7532	0.4623	0.5377
1995-96	0.7454	0.4655	0.5345

Appendix Table 2.9(b): Net value added as a percentage of gross output and material and total labour cost as a percentage of net value added (at constant prices)

year	Net value added as a percentage of total output NVA/X	Labour cost as a proportion of NVA L^1/NVA	Surplus as a proportion of NVA S^1/NVA
1980-81	0.7073	0.6083	0.3917
1981-82	0.7102	0.5735	0.4265
1982-83	0.7027	0.5734	0.4266
1983-84	0.7187	0.5510	0.4490
1984-85	0.7113	0.6018	0.3982
1985-86	0.7068	0.6055	0.3945
1986-87	0.6975	0.6286	0.3714
1987-88	0.7019	0.5939	0.4061
1988-89	0.7146	0.5369	0.4631
1989-90	0.7123	0.5651	0.4349
1990-91	0.7144	0.5597	0.4403
1991-92	0.7025	0.5245	0.4755
1992-93	0.7115	0.4979	0.5021
1993-94	0.7142	0.5253	0.4747
1994-95	0.7129	0.5147	0.4853
1995-96	0.6988	0.5314	0.4686

Appendix Table 2.10(a): Net value added as a percentage of gross output and material and total labour cost as a percentage of net value added (at current prices)

year	Net value added as a percentage of total output NVA/X	Labour cost as a proportion of NVA L^2/NVA	Surplus as a proportion of NVA S^2/NVA
1980-81	0.7073	0.5919	0.4081
1981-82	0.7086	0.5749	0.4251
1982-83	0.7094	0.5725	0.4275
1983-84	0.7219	0.2437	0.7563
1984-85	0.7189	0.5676	0.4324
1985-86	0.7135	0.5662	0.4338
1986-87	0.7078	0.5642	0.4358
1987-88	0.7150	0.5351	0.4649
1988-89	0.7291	0.5084	0.4916
1989-90	0.7338	0.5079	0.4921
1990-91	0.7385	0.4935	0.5065
1991-92	0.7369	0.4683	0.5317
1992-93	0.7391	0.4508	0.5492
1993-94	0.7499	0.4533	0.5467
1994-95	0.7532	0.4506	0.5494
1995-96	0.7454	0.4538	0.5462

Appendix Table 2.10(b): Net value added as a percentage of gross output and material and total labour cost as a percentage of net value added (at constant prices)

year	Net value added as a percentage of total output NVA/X	Labour cost as a proportion of NVA L^2/NVA	Surplus as a proportion of NVA S^2/NVA
1980-81	0.7073	0.5919	0.4081
1981-82	0.7102	0.5581	0.4419
1982-83	0.7027	0.5581	0.4419
1983-84	0.7187	0.2375	0.7625
1984-85	0.7113	0.5859	0.4141
1985-86	0.7068	0.5895	0.4105
1986-87	0.6975	0.6121	0.3879
1987-88	0.7019	0.5783	0.4217
1988-89	0.7146	0.5230	0.4770
1989-90	0.7123	0.5505	0.4495
1990-91	0.7144	0.5453	0.4547
1991-92	0.7025	0.5111	0.4889
1992-93	0.7115	0.4852	0.5148
1993-94	0.7142	0.5119	0.4881
1994-95	0.7129	0.5017	0.4983
1995-96	0.6988	0.5180	0.4820

Appendix Table 2.11(a): Net value added as a percentage of gross output and material and total labour cost as a percentage of net value added (at current prices)

Year	Net value added as a percentage of total output NVA/X	Labour cost as a proportion of NVA L^3/NVA	Surplus as a proportion of NVA S^3/NVA
1980-81	0.7073	0.5919	0.4081
1981-82	0.7086	0.5749	0.4251
1982-83	0.7094	0.5725	0.4275
1983-84	0.7219	0.5504	0.4496
1984-85	0.7189	0.5676	0.4324
1985-86	0.7135	0.5662	0.4338
1986-87	0.7078	0.5642	0.4358
1987-88	0.7150	0.5351	0.4649
1988-89	0.7291	0.5084	0.4916
1989-90	0.7338	0.5079	0.4921
1990-91	0.7385	0.4935	0.5065
1991-92	0.7369	0.4683	0.5317
1992-93	0.7391	0.4508	0.5492
1993-94	0.7499	0.4533	0.5467
1994-95	0.7532	0.4506	0.5494
1995-96	0.7454	0.4538	0.5462

Appendix Table 2.11(b): Net value added as a percentage of gross output and material and total labour cost as a percentage of net value added (at constant prices)

year	Net value added as a percentage of total output NVA/X	Labour cost as a proportion of NVA L^3/NVA	Surplus as a proportion of NVA S^3/NVA
1980-81	0.7073	0.5919	0.4081
1981-82	0.7102	0.5581	0.4419
1982-83	0.7027	0.5581	0.4419
1983-84	0.7187	0.5363	0.4637
1984-85	0.7113	0.5859	0.4141
1985-86	0.7068	0.5895	0.4105
1986-87	0.6975	0.6121	0.3879
1987-88	0.7019	0.5783	0.4217
1988-89	0.7146	0.5230	0.4770
1989-90	0.7123	0.5505	0.4495
1990-91	0.7144	0.5453	0.4547
1991-92	0.7025	0.5110	0.4890
1992-93	0.7115	0.4852	0.5148
1993-94	0.7142	0.5119	0.4881
1994-95	0.7129	0.5017	0.4983
1995-96	0.6988	0.5180	0.4820

Appendix Table 2.12(a): Net Value Added and Surplus Per Unit of Labour Cost (at current prices, in Rs.)

Year	NVA/L^1	S^1/L^1	NVA/L^3	S^3/L^3
1980-81	1.64	0.64	1.69	0.69
1981-82	1.69	0.69	1.74	0.74
1982-83	1.70	0.70	1.75	0.75
1983-84	1.77	0.77	1.82	0.82
1984-85	1.72	0.72	1.76	0.76
1985-86	1.72	0.72	1.77	0.77
1986-87	1.73	0.73	1.77	0.77
1987-88	1.82	0.82	1.87	0.87
1988-89	1.92	0.92	1.97	0.97
1989-90	1.92	0.92	1.97	0.97
1990-91	1.97	0.97	2.03	1.03
1991-92	2.08	1.08	2.14	1.14
1992-93	2.16	1.16	2.22	1.22
1993-94	2.15	1.15	2.21	1.21
1994-95	2.16	1.16	2.22	1.22
1995-96	2.15	1.15	2.20	1.20

Appendix Table 2.12(b): Net Value Added and Surplus Per Unit of Labour Cost (at constant prices, in Rs.)

Year	NVA/L^1	S^1/L^1	NVA/L^3	S^3/L^3
1980-81	1.64	0.64	1.69	0.69
1981-82	1.74	0.74	1.79	0.79
1982-83	1.74	0.74	1.79	0.79
1983-84	1.81	0.81	1.86	0.86
1984-85	1.66	0.66	1.71	0.71
1985-86	1.65	0.65	1.70	0.70
1986-87	1.59	0.59	1.63	0.63
1987-88	1.68	0.68	1.73	0.73
1988-89	1.86	0.86	1.91	0.91
1989-90	1.77	0.77	1.82	0.82
1990-91	1.79	0.79	1.83	0.83
1991-92	1.91	0.91	1.96	0.96
1992-93	2.01	1.01	2.06	1.06
1993-94	1.90	0.90	1.95	0.95
1994-95	1.94	0.94	1.99	0.99
1995-96	1.88	0.88	1.93	0.93

Appendix Table 2.13(a): Net Value Added and Surplus per Worker (at current prices, in Rs.)

Year	NVA per worker[1] NVA/W^1+F^1	NVA per worker[2] NVA/W^2+F^2	NVA per worker[3] NVA/W^3+F^3	surplus per worker[1] S^1/W^1+F^1	surplus per worker[3] S^3/W^3+F^3
1980-81	2881.22	2553.17	2553.17	1128.59	1041.91
1981-82	3158.55	2798.83	2798.59	1292.56	1189.58
1982-83	3266.04	2894.00	2893.50	1344.88	1236.92
1983-84	3850.81	3412.05	3411.17	1673.51	1533.72
1984-85	4005.79	3549.27	3548.04	1670.39	1534.27
1985-86	4182.62	3705.84	3704.24	1750.38	1606.96
1986-87	4353.27	3856.92	3854.92	1831.06	1680.06
1987-88	4788.90	4242.74	4240.18	2157.67	1971.31
1988-89	5867.24	5197.93	5194.34	2804.67	2553.54
1989-90	6375.72	5648.23	5643.84	3051.13	2777.10
1990-91	7279.73	6448.89	6443.32	3591.82	3263.29
1991-92	8296.02	7348.95	7341.96	4309.00	3904.02
1992-93	9044.46	8011.68	8003.37	4860.51	4395.63
1993-94	10280.27	9106.08	9095.85	5498.66	4972.75
1994-95	11643.47	10313.23	10300.76	6260.65	5659.24
1995-96	12094.45	10712.34	10698.45	6464.49	5843.83

Appendix Table 2.13(b): Net Value Added and Surplus per Worker (at constant prices, in Rs.)

Year	NVA per worker 1 NVA/W^1+F^1	NVA per worker 2 NVA/W^2+F^2	NVA per worker 3 NVA/W^3+F^3	surplus per worker S^1/W^1+F^1	surplus per worker S^3/W^3+F^3
1980-81	2881.22	2553.17	2553.17	1128.59	1041.91
1981-82	2970.69	2632.37	2632.15	1267.15	1163.21
1982-83	2849.02	2524.49	2524.05	1215.44	1115.44
1983-84	3096.22	2743.44	2742.73	1390.25	1271.71
1984-85	3023.32	2678.77	2677.85	1203.93	1109.02
1985-86	2960.23	2622.78	2621.65	1167.82	1076.09
1986-87	2839.23	2515.51	2514.20	1054.49	975.25
1987-88	2787.97	2470.01	2468.52	1132.32	1040.88
1988-89	3222.17	2854.6	2852.63	1492.07	1360.8
1989-90	3199.62	2834.53	2832.33	1391.43	1273.16
1990-91	3246.82	2876.26	2873.77	1429.53	1306.75
1991-92	3087.38	2734.93	2732.33	1468.02	1335.98
1992-93	3202.76	2837.04	2834.10	1607.95	1458.92
1993-94	3246.10	2875.34	2872.11	1541.07	1401.88
1994-95	3333.75	2952.87	2949.30	1617.79	1469.66
1995-96	3139.94	2781.12	2777.51	1471.35	1338.72

Appendix Table 2.14(a): Different forms of surplus (at current prices, values in Rs. crores)

Year	Rent R	Interest I	Profit P^1	Profit P^3	Surplus@ S^1	Surplus@ S^3
980-81	571	1289	15413.19	16135.23	17273.19	17995.23
981-82	662	1565	18314.29	19097.02	20541.29	21324.02
982-83	790	1771	19486.18	20306.70	22047.18	22867.70
983-84	916	1980	25214.16	26160.99	28110.16	29056.99
984-85	969	2458.	25229.39	26263.43	28656.39	29690.43
985-86	1083	2761	26842.71	27939.21	30686.71	31783.21
986-87	1124	3232	28560.09	29717.82	32916.09	34073.82
987-88	1150	3600	34622.60	35852.34	39372.60	40602.34
988-89	1404	4352	45559.58	47016.94	51315.58	52772.94
989-90	1650	4873	50559.92	52170.73	57082.92	58693.73
990-91	1982	4461	62290.16	64109.49	68733.16	70552.49
991-92	2233	5204	76895.03	78897.68	84332.03	86334.68
992-93	2602	5732	88956.28	91096.05	97290.28	99430.05
993-94	2992	6597	102989.3	105479.2	112578.3	115068.2
994-95	3464	6914	120733.9	123587.8	131111.9	133965.8
995-96	3705	7727	127050.7	130089.9	138482.7	141521.9

@: The slight difference between the two measures of surpluses- one, arrived at by summing up of rent, interest and profit; and another arrived at by deducting total labour cost from the net value added- is due to difference in the origin of data.

Appendix Table 2.14(b): Different forms of surplus (at constant prices, values in Rs. crores)

Year	Rent R	Interest I	Profit P^1	Profit P^3	Surplus@ S^1	Surplus@ S^3
980-81	571	1289	15413.19	16135.23	17273.19	17995.23
981-82	604.3705	1428.761	16719.97	17434.55	18753.10	19467.68
982-83	671.7463	1505.902	16569.33	17267.03	18746.98	19444.67
983-84	717.7088	1551.379	19755.92	20497.78	22025.01	22766.87
984-85	754.8971	1914.899	19654.90	20460.46	22324.69	23130.26
985-86	798.1027	2034.682	19781.38	20589.43	22614.17	23422.22
986-87	795.3564	2287.003	20209.47	21028.70	23291.83	24111.06
987-88	723.6153	2265.230	21785.60	22559.40	24774.45	25548.24
988-89	793.1436	2458.519	25737.38	26560.67	28989.05	29812.33
989-90	897.4069	2650.341	27498.68	28374.77	31046.43	31922.52
990-91	976.6722	2198.251	30694.79	31591.30	33869.71	34766.22
991-92	906.9483	2113.640	31231.44	32044.83	34252.03	35065.42
992-93	991.8154	2184.890	33907.84	34723.47	37084.55	37900.18
993-94	1066.894	2352.374	36724.19	37612.04	40143.46	41031.31
994-95	1104.268	2204.073	38488.04	39397.83	41796.39	42706.17
995-96	1098.076	2290.103	37654.89	38555.64	41043.07	41943.82

@: The slight difference between the two measures of surpluses- one, arrived at by summing up of rent, interest and profit; and another arrived at by deducting total labour cost from the net value added- is due to difference in the origin of data.

Appendix Table 2.15: Shares of rent, interest and profit in surplus

Year	Share of rent in surplus[3] R*	Share of interest in surplus[3] I*	Share of profit[1] in surplus[1] P^1*	Share of profit[3] in surplus[3] P^3*
1980-81	0.0317	0.0716	0.8923	0.8966
1981-82	0.0310	0.0734	0.8916	0.8956
1982-83	0.0345	0.0774	0.8838	0.8880
1983-84	0.0315	0.0681	0.8970	0.9003
1984-85	0.0326	0.0828	0.8804	0.8846
1985-86	0.0341	0.0869	0.8747	0.8791
1986-87	0.0330	0.0949	0.8677	0.8722
1987-88	0.0283	0.0887	0.8794	0.8830
1988-89	0.0266	0.0825	0.8878	0.8909
1989-90	0.0281	0.0830	0.8857	0.8889
1990-91	0.0281	0.0632	0.9063	0.9087
1991-92	0.0259	0.0603	0.9118	0.9139
1992-93	0.0262	0.0576	0.9143	0.9162
1993-94	0.0260	0.0573	0.9148	0.9167
1994-95	0.0259	0.0516	0.9208	0.9225
1995-96	0.0262	0.0546	0.9174	0.9192

Appendix 3.3

Results of the Estimation Exercise for Agriculture Proper and Livestock Production

Different notations used in the tables refer to the following:

X or $X_{a,l}$: value of output in agriculture and livestock production
M or $M_{a,l}$: total material costs in agriculture and livestock production
NVA or $NVA_{a,l}$: net value added in agriculture and livestock
W^1: no. of agricultural labourers estimated on the basis of compound growth rate considering only main workers
W^3: no. of agricultural labourers estimated on the basis of compound growth rate considering main as well as marginal workers and decomposition of marginal workers based on *decadal growth method*
F^1: no. of family workers estimated on the basis of compound growth rate considering cultivators and all those engaged in livestock production, forestry, fishing, plantation, fruit-growing ,etc., but only under main workers
F^2: no. of family workers estimated on the basis of compound growth rate considering cultivators and all those engaged in livestock production, forestry, fishing, plantation, fruit-growing ,etc., under main as well as marginal workers
F^3: no. of family workers estimated on the basis of compound growth rate considering only cultivators under main workers only
F^4: no. of family workers estimated on the basis of compound growth rate considering only cultivators under main as well as marginal workers

The four numerical superscripts to any of the variables refer to the estimation of the respective variables based on four different methods of estimating the number of family workers mentioned above. Other notations refer to the following variables:

L_w : wage cost of agricultural labourers
L_f^1, L_f^2, L_f^3 & L_f^4 : imputed value of family labour based on four different methods
L^1, L^2, L^3 & L^4 : total labour cost based on four different methods
P^1, P^2, P^3 & P^4 : profit based on four different methods
S^1, S^2, S^3 & S^4 : surplus based on four different methods
OS : operating surplus
MI : mixed income
R : rent
I : interest
R^1*, R^2*, R^3* & R^4* : share of rent based on four different methods
I^1*, I^2*, I^3* & I^4* : share of interest based on four different methods
P^1*, P^2*, P^3* & P^4* : share of profit based on four different methods
NFCS : net fixed capital stock
v : inventories
K_{fn} : net fixed capital, inventories included
q : depreciation of fixed capital
K_{fg} : gross fixed capital, inventories included
K_{mw} : total material working capital
K_{tw}^1, K_{tw}^2, K_{tw}^3 and K_{tw}^4 : total working capital based on four different methods
K_{wa}^1, K_{wa}^2, K_{wa}^3 and K_{wa}^4 : estimates of working capital advanced based on four different methods
r^1, r^2, r^3 and r^4 : rate of return based on four different methods
NSA : net sown area
GSA : gross sown area

Appendix Table 3.1(a): Wage cost per worker per annum (in Rs., at current prices)

Year	Annual Wage Bill	No. of Agri. labourers (main only)	No. of Agri. labourers (main & marginal)	Wage Cost per Agri. labourer	Wage Cost per Agri. labourer
	(L_w)	(W^1)	(W^3)	(L_w/W^1)	(L_w/W^3)
1980-81	9212	55499602	64363620	1659.83	1431.24
1981-82	10085	57165427	66295490	1764.18	1521.22
1982-83	10656	58881252	68285345	1809.74	1560.51
1983-84	12414	60648577	70334926	2046.87	1764.98
1984-85	13642	62468949	72446025	2183.80	1883.06
1985-86	14563	64343959	74620488	2263.30	1951.61
1986-87	15572	66275248	76860217	2349.60	2026.02
1987-88	16735	68264505	79167172	2451.49	2113.88
1988-89	20001	70313470	81543370	2844.55	2452.81
1989-90	22465	72423934	83990889	3101.88	2674.69
1990-91	25745	74597744	86511871	3451.18	2975.89
1991-92	28680	76836801	89108520	3732.59	3218.55
1992-93	30934	79143064	91783107	3908.62	3370.34
1993-94	36399	81518549	94537971	4465.12	3850.20
1994-95	42201	83965335	97375523	5026.00	4333.84
1995-96	45328	86485561	100298243	5241.11	4519.32

Table 3.1(b): Wage cost per worker per annum (in Rs., at constant prices)

year	Annual Wage Bill	No. of Agri. labourers (main only)	No. of Agri. labourers (main & marginal)	Wage Cost per Agri. labourer	Wage Cost per Agri. labourer
	(L_w)	(W^1)	(W^3)	(L_w/W^1)	(L_w/W^3)
1980-81	9212.00	55499602	64363620	1659.83	1431.24
1981-82	9207.06	57165427	66295490	1610.60	1388.79
1982-83	9060.92	58881252	68285345	1538.85	1326.92
1983-84	9726.68	60648577	70334926	1603.78	1382.91
1984-85	10627.77	62468949	72446025	1701.29	1466.99
1985-86	10732.01	64343959	74620488	1667.91	1438.21
1986-87	11018.94	66275248	76860217	1662.60	1433.63
1987-88	10530.18	68264505	79167172	1542.56	1330.12
1988-89	11298.91	70313470	81543370	1606.93	1385.63
1989-90	12218.33	72423934	83990889	1687.06	1454.72
1990-91	12686.39	74597744	86511871	1700.64	1466.43
1991-92	11648.58	76836801	89108520	1516.02	1307.24
1992-93	11791.25	79143064	91783107	1489.86	1284.69
1993-94	12979.24	81518549	94537971	1592.18	1372.91
1994-95	13453.01	83965335	97375523	1602.21	1381.56
1995-96	13434.17	86485561	100298243	1553.34	1339.42

Table 3.2(a): Imputed value of family labour (in Rs. crores, at current prices)

Year	No. of family workers (all inclusive), main only (F^1)	No. of family workers (all inclusive), main & marginal (F^2)	No. of family workers (cultivators only) main only (F^3)	No. of family workers (cultivators only) main and marginal (F^4)	Imputed value of family labour (L_f^1)	Imputed value of family labour (L_f^2)	Imputed value of family labour (L_f^3)	Imputed value of family labour (L_f^4)
1980-81	97515484	108312213	92522833	102884594	16185.93	15502.11	15357.23	14725.29
1981-82	99286303	110278970	94197573	104737484	17515.87	16775.85	16618.13	15932.87
1982-83	101089279	112281439	95902627	106623744	18294.57	17521.64	17355.92	16638.75
1983-84	102924995	114320270	97638544	108543974	21067.45	20177.34	19985.38	19157.83
1984-85	104794048	116396122	99405882	110498786	22884.98	21918.05	21708.31	20807.55
1985-86	106697040	118509668	101205211	112488803	24148.79	23128.45	22905.83	21953.41
1986-87	108634590	120661592	103037109	114514659	25524.73	24446.23	24209.55	23200.85
1987-88	110607325	122852591	104902166	116577000	27115.32	25969.58	25716.70	24642.99
1988-89	112615884	125083375	106800982	118676482	32034.12	30680.51	30380.05	29109.03
1989-90	114660916	127354666	108734168	120813775	35566.38	34063.49	33727.98	32314.00
1990-91	116743085	129667200	110702346	122989559	40290.10	38587.56	38205.34	36600.37
1991-92	118863065	132021725	112706150	125204528	44366.67	42491.82	42068.54	40297.67
1992-93	121021542	134419004	114746225	127459386	47302.70	45303.73	44849.92	42958.11
1993-94	123219216	136859814	116823226	129754854	55018.84	52693.75	52162.96	49958.2
1994-95	125456798	139344944	118937823	132091662	63054.62	60389.88	59778.18	57246.42
1995-96	127735013	141875199	121090696	134470554	66947.28	64117.96	63464.92	60771.57

Table 3.2(b): Imputed value of family labour (in Rs. crores, at constant prices)

year	no. of family workers (all inclusive), main only (F^1)	no. of family workers (all inclusive), main & marginal (F^2)	no. of family workers (cultivators only) main only (F^3)	no. of family workers (cultivators only) main and marginal (F^4)	Imputed value of family labour (L_f^1)	Imputed value of family labour (L_f^2)	Imputed value of family labour (L_f^3)	Imputed value of family labour (L_f^4)
1980-81	97515484	108312213	92522833	102884594	16185.93	15502.11	15357.23	14725.29
1981-82	99286303	110278970	94197573	104737484	15991.05	15315.46	15171.46	14545.86
1982-83	101089279	112281439	95902627	106623744	15556.09	14898.86	14757.95	14148.12
1983-84	102924995	114320270	97638544	108543974	16506.87	15809.45	15659.04	15010.64
1984-85	104794048	116396122	99405882	110498786	17828.49	17075.21	16911.80	16210.07
1985-86	106697040	118509668	101205211	112488803	17796.14	17044.21	16880.15	16178.28
1986-87	108634590	120661592	103037109	114514659	18061.62	17298.45	17130.98	16417.21
1987-88	110607325	122852591	104902166	116577000	17061.79	16340.86	16181.74	15506.13
1988-89	112615884	125083375	106800982	118676482	18096.62	17331.95	17162.21	16444.19
1989-90	114660916	127354666	108734168	120813775	19343.95	18526.55	18344.07	17575.03
1990-91	116743085	129667200	110702346	122989559	19853.80	19014.83	18826.49	18035.6
1991-92	118863065	132021725	112706150	125204528	18019.83	17258.35	17086.43	16367.18
1992-93	121021542	134419004	114746225	127459386	18030.57	17268.62	17095.63	16374.53
1993-94	123219216	136859814	116823226	129754854	19618.75	18789.66	18600.39	17814.21
1994-95	125456798	139344944	118937823	132091662	20100.81	19251.33	19056.33	18249.25
1995-96	127735013	141875199	121090696	134470554	19841.62	19003.08	18809.53	18011.28

Table 3.3(a): Total labour cost (in Rs. crores, at current prices)

	Total labour cost 1	total labour cost 2	total labour cost 3	total labour cost 4
	$(L^1=L_w+L_f^1)$	$(L^2=L_w+L_f^2)$	$(L^3=L_w+L_f^3)$	$(L^4=L_w+L_f^4)$
1980-81	25397.93	24714.11	24569.23	23937.29
1981-82	27600.87	26860.85	26703.13	26017.87
1982-83	28950.57	28177.64	28011.92	27294.75
1983-84	33481.45	32591.34	32399.38	31571.83
1984-85	36526.98	35560.05	35350.31	34449.55
1985-86	38711.79	37691.45	37468.83	36516.41
1986-87	41096.73	40018.23	39781.55	38772.85
1987-88	43850.32	42704.58	42451.70	41377.99
1988-89	52035.12	50681.51	50381.05	49110.03
1989-90	58031.38	56528.49	56192.98	54779
1990-91	66035.10	64332.56	63950.34	62345.37
1991-92	73046.67	71171.82	70748.54	68977.67
1992-93	78236.70	76237.73	75783.92	73892.11
1993-94	91417.84	89092.75	88561.96	86357.2
1994-95	105255.62	102590.88	101979.18	99447.42
1995-96	112275.28	109445.96	108792.92	106099.6

Table 3.3(b): Total labour cost (in Rs. crores, at constant prices)

	Total labour cost 1	total labour cost 2	total labour cost 3	total labour cost 4
year	$(L^1=L_w+L_f^1)$	$(L^2=L_w+L_f^2)$	$(L^3=L_w+L_f^3)$	$(L^4=L_w+L_f^4)$
1980-81	25397.93	24714.11	24569.23	23937.29
1981-82	25198.12	24522.52	24378.53	23752.92
1982-83	24617.02	23959.78	23818.87	23209.05
1983-84	26233.55	25536.13	25385.72	24737.32
1984-85	28456.25	27702.98	27539.57	26837.84
1985-86	28528.15	27776.22	27612.16	26910.29
1986-87	29080.56	28317.40	28149.92	27436.15
1987-88	27591.97	26871.03	26711.92	26036.31
1988-89	29395.53	28630.86	28461.12	27743.1
1989-90	31562.28	30744.88	30562.41	29793.36
1990-91	32540.19	31701.23	31512.88	30721.99
1991-92	29668.41	28906.93	28735.01	28015.76
1992-93	29821.82	29059.86	28886.88	28165.77
1993-94	32597.99	31768.91	31579.63	30793.46
1994-95	33553.82	32704.34	32509.34	31702.26
1995-96	33275.79	32437.25	32243.70	31445.45

Table 3.4(a): Net value added and surplus (in Rs. crores, at current prices)

Year	Value of output ($X_{a,1}$)	material costs of production ($M_{a,1}$)	net value added ($NVA_{a,1}$)	Surplus[1] (S^1)	Surplus[2] (S^2)	Surplus[3] (S^3)	Surplus[4] (S^4)
1980-81	57713	17657	40056	14658.07	15341.89	15486.77	16118.71
1981-82	64628	19657	44971	17370.13	18110.15	18267.87	18953.13
1982-83	68027	20651	47376	18425.43	19198.36	19364.08	20081.25
1983-84	81254	23448	57806	24324.55	25214.66	25406.62	26234.17
1984-85	86526	25269	61257	24730.02	25696.95	25906.69	26807.45
1985-86	93089	27702	65387	26675.21	27695.55	27918.17	28870.59
1986-87	99688	30290	69398	28301.27	29379.77	29616.45	30625.15
1987-88	111105	32879	78226	34375.68	35521.42	35774.30	36848.01
1988-89	135979	38018	97961	45925.88	47279.49	47579.95	48850.97
1989-90	149483	41096	108387	50355.62	51858.51	52194.02	53608
1990-91	174133	46874	127259	61223.90	62926.44	63308.66	64913.63
1991-92	205035	55211	149824	76777.33	78652.18	79075.46	80846.33
1992-93	227726	60777	166949	88712.30	90711.27	91165.08	93056.89
1993-94	260914	66598	194316	102898.16	105223.25	105754.04	107958.8
1994-95	301154	75758	225396	120140.38	122805.12	123416.82	125948.6
1995-96	323324	83742	239582	127306.72	130136.04	130789.08	133482.4

Table 3.4(b): Net value added and surplus (in Rs. crores, at constant prices)

year	Value of output ($X_{a,1}$)	material costs of production ($M_{a,1}$)	net value added ($NVA_{a,1}$)	Surplus[1] (S^1)	Surplus[2] (S^2)	Surplus[3] (S^3)	Surplus[4] (S^4)
1980-81	57713	17657	40056	14658.07	15341.89	15486.77	16118.71
1981-82	61030	18387	42643	17444.88	18120.48	18264.47	18890.08
1982-83	60683	18726	41957	17339.98	17997.22	18138.13	18747.95
1983-84	66317	19264	47053	20819.45	21516.87	21667.28	22315.68
1984-85	66875	19957	46918	18461.75	19215.02	19378.43	20080.16
1985-86	67403	20413	46990	18461.85	19213.78	19377.84	20079.71
1986-87	67031	20946	46085	17004.44	17767.60	17935.08	18648.85
1987-88	66970	20593	46377	18785.03	19505.97	19665.08	20340.69
1988-89	77674	22749	54925	25529.47	26294.14	26463.88	27181.9
1989-90	78739	23287	55452	23889.72	24707.12	24889.59	25658.64
1990-91	81686	23913	57773	25232.81	26071.77	26260.12	27051.01
1991-92	80668	24636	56032	26363.59	27125.07	27296.99	28016.24
1992-93	84791	25010	59781	29959.18	30721.14	30894.12	31615.23
1993-94	87653	25560	62093	29495.01	30324.09	30513.37	31299.54
1994-95	92331	27029	65302	31748.18	32597.66	32792.66	33599.74
1995-96	90500	27835	62665	29389.21	30227.75	30421.30	31219.55

Table 3.5(a): Total material cost, total labour cost and surplus as a proportion of total output (at current prices)

Year	Share of material cost $(M_{a,l}/X_{a,l})$	Share of total labour cost $(L^1/X_{a,l})$	Share of surplus $(S^1/X_{a,l})$	Share of total labour cost $(L^2/X_{a,l})$	Share of surplus $(S^2/X_{a,l})$	Share of total labour cost $(L^3/X_{a,l})$	Share of surplus $(S^3/X_{a,l})$	Share of total labour cost $(L^4/X_{a,l})$	Share of surplus $(S^4/X_{a,l})$
1980-81	0.3059	0.4401	0.2540	0.4282	0.2658	0.4257	0.2683	0.4148	0.2793
1981-82	0.3042	0.4271	0.2688	0.4156	0.2802	0.4132	0.2827	0.4026	0.2933
1982-83	0.3036	0.4256	0.2709	0.4142	0.2822	0.4118	0.2847	0.4012	0.2952
1983-84	0.2886	0.4121	0.2994	0.4011	0.3103	0.3987	0.3127	0.3886	0.3229
1984-85	0.2920	0.4222	0.2858	0.4110	0.2970	0.4086	0.2994	0.3981	0.3098
1985-86	0.2976	0.4159	0.2866	0.4049	0.2975	0.4025	0.2999	0.3923	0.3101
1986-87	0.3038	0.4123	0.2839	0.4014	0.2947	0.3991	0.2971	0.3889	0.3072
1987-88	0.2959	0.3947	0.3094	0.3844	0.3197	0.3821	0.3220	0.3724	0.3317
1988-89	0.2796	0.3827	0.3377	0.3727	0.3477	0.3705	0.3499	0.3612	0.3593
1989-90	0.2749	0.3882	0.3369	0.3782	0.3469	0.3759	0.3492	0.3665	0.3586
1990-91	0.2692	0.3792	0.3516	0.3694	0.3614	0.3672	0.3636	0.3580	0.3728
1991-92	0.2693	0.3563	0.3745	0.3471	0.3836	0.3451	0.3857	0.3364	0.3943
1992-93	0.2669	0.3436	0.3896	0.3348	0.3983	0.3328	0.4003	0.3245	0.4086
1993-94	0.2552	0.3504	0.3944	0.3415	0.4033	0.3394	0.4053	0.3310	0.4138
1994-95	0.2516	0.3495	0.3989	0.3407	0.4078	0.3386	0.4098	0.3302	0.4182
1995-96	0.2590	0.3473	0.3937	0.3385	0.4025	0.3365	0.4045	0.3282	0.4128

Table 3.5(b): Total material cost, total labour cost and surplus as a proportion of total output (at constant prices)

year	Share of material cost $(M_{a,l}/X_{a,l})$	Share of total labour cost $(L^1/X_{a,l})$	Share of surplus $(S^1/X_{a,l})$	Share of total labour cost $(L^2/X_{a,l})$	Share of surplus $(S^2/X_{a,l})$	Share of total labour cost $(L^3/X_{a,l})$	Share of surplus $(S^3/X_{a,l})$	Share of total labour cost $(L^4/X_{a,l})$	Share of surplus $(S^4/X_{a,l})$
1980-81	0.3059	0.4401	0.2540	0.4282	0.2658	0.4257	0.2683	0.4148	0.2793
1981-82	0.3013	0.4129	0.2858	0.4018	0.2969	0.3995	0.2993	0.3892	0.3095
1982-83	0.3086	0.4057	0.2857	0.3948	0.2966	0.3925	0.2989	0.3825	0.3089
1983-84	0.2905	0.3956	0.3139	0.3851	0.3245	0.3828	0.3267	0.3730	0.3365
1984-85	0.2984	0.4255	0.2761	0.4143	0.2873	0.4118	0.2898	0.4013	0.3003
1985-86	0.3029	0.4232	0.2739	0.4121	0.2851	0.4097	0.2875	0.3992	0.2979
1986-87	0.3125	0.4338	0.2537	0.4225	0.2651	0.4200	0.2676	0.4093	0.2782
1987-88	0.3075	0.4120	0.2805	0.4012	0.2913	0.3989	0.2936	0.3888	0.3037
1988-89	0.2929	0.3784	0.3287	0.3686	0.3385	0.3664	0.3407	0.3572	0.3499
1989-90	0.2957	0.4008	0.3034	0.3905	0.3138	0.3881	0.3161	0.3784	0.3259
1990-91	0.2927	0.3984	0.3089	0.3881	0.3192	0.3858	0.3215	0.3761	0.3312
1991-92	0.3054	0.3678	0.3268	0.3583	0.3363	0.3562	0.3384	0.3473	0.3473
1992-93	0.2950	0.3517	0.3533	0.3427	0.3623	0.3407	0.3644	0.3322	0.3729
1993-94	0.2916	0.3719	0.3365	0.3624	0.3460	0.3603	0.3481	0.3513	0.3571
1994-95	0.2927	0.3634	0.3439	0.3542	0.3531	0.3521	0.3552	0.3434	0.3639
1995-96	0.3076	0.3677	0.3247	0.3584	0.3340	0.3563	0.3361	0.3475	0.3450

Table 3.6(a): Share of net value added in gross output and shares of total labour cost and surplus in net value added (at current prices)

Year	Share of NVA in gross output ($NVA_{a,l}/X_{a,l}$)	Share of total labour cost in NVA ($L^1/NVA_{a,l}$)	Share of surplus in NVA ($S^1/NVA_{a,l}$)	Share of total labour cost in NVA ($L^2/NVA_{a,l}$)	Share of surplus in NVA ($S^2/NVA_{a,l}$)	Share of total labour cost in NVA ($L^3/NVA_{a,l}$)	Share of surplus in NVA ($S^3/NVA_{a,l}$)	Share of total labour cost in NVA ($L^4/NVA_{a,l}$)	Share of surplus in NVA ($S^4/NVA_{a,l}$)
1980-81	0.6941	0.6341	0.3659	0.6170	0.3830	0.6134	0.3866	0.5976	0.4024
1981-82	0.6958	0.6137	0.3863	0.5973	0.4027	0.5938	0.4062	0.5785	0.4215
1982-83	0.6964	0.6111	0.3889	0.5948	0.4052	0.5913	0.4087	0.5761	0.4239
1983-84	0.7114	0.5792	0.4208	0.5638	0.4362	0.5605	0.4395	0.5462	0.4538
1984-85	0.7080	0.5963	0.4037	0.5805	0.4195	0.5771	0.4229	0.5624	0.4376
1985-86	0.7024	0.5920	0.4080	0.5764	0.4236	0.5730	0.4270	0.5585	0.4415
1986-87	0.6962	0.5922	0.4078	0.5766	0.4234	0.5732	0.4268	0.5587	0.4413
1987-88	0.7041	0.5606	0.4394	0.5459	0.4541	0.5427	0.4573	0.5290	0.4710
1988-89	0.7204	0.5312	0.4688	0.5174	0.4826	0.5143	0.4857	0.5013	0.4987
1989-90	0.7251	0.5354	0.4646	0.5215	0.4785	0.5184	0.4816	0.5054	0.4946
1990-91	0.7308	0.5189	0.4811	0.5055	0.4945	0.5025	0.4975	0.4899	0.5101
1991-92	0.7307	0.4875	0.5125	0.4750	0.5250	0.4722	0.5278	0.4604	0.5396
1992-93	0.7331	0.4686	0.5314	0.4567	0.5433	0.4539	0.5461	0.4426	0.5574
1993-94	0.7448	0.4705	0.5295	0.4585	0.5415	0.4558	0.5442	0.4444	0.5556
1994-95	0.7484	0.4670	0.5330	0.4552	0.5448	0.4524	0.5476	0.4412	0.5588
1995-96	0.7410	0.4686	0.5314	0.4568	0.5432	0.4541	0.5459	0.4429	0.5571

Table 3.6(b): Share of net value added in gross output and shares of total labour cost and surplus in net value added (at constant prices)

year	Share of NVA in gross output ($NVA_{a,l}/X_{a,l}$)	Share of total labour cost in NVA ($L^1/NVA_{a,l}$)	Share of surplus in NVA ($S^1/NVA_{a,l}$)	Share of total labour cost in NVA ($L^2/NVA_{a,l}$)	Share of surplus in NVA ($S^2/NVA_{a,l}$)	Share of total labour cost in NVA ($L^3/NVA_{a,l}$)	Share of surplus in NVA ($S^3/NVA_{a,l}$)	Share of total labour cost in NVA ($L^4/NVA_{a,l}$)	Share of surplus in NVA ($S^4/NVA_{a,l}$)
1980-81	0.6941	0.6341	0.3659	0.6170	0.3830	0.6134	0.3866	0.597596	0.402404
1981-82	0.6987	0.5909	0.4091	0.5751	0.4249	0.5717	0.4283	0.557018	0.442982
1982-83	0.6914	0.5867	0.4133	0.5711	0.4289	0.5677	0.4323	0.553163	0.446837
1983-84	0.7095	0.5575	0.4425	0.5427	0.4573	0.5395	0.4605	0.525733	0.474267
1984-85	0.7016	0.6065	0.3935	0.5905	0.4095	0.5870	0.4130	0.572016	0.427984
1985-86	0.6971	0.6071	0.3929	0.5911	0.4089	0.5876	0.4124	0.572681	0.427319
1986-87	0.6875	0.6310	0.3690	0.6145	0.3855	0.6108	0.3892	0.595338	0.404662
1987-88	0.6925	0.5949	0.4051	0.5794	0.4206	0.5760	0.4240	0.561406	0.438594
1988-89	0.7071	0.5352	0.4648	0.5213	0.4787	0.5182	0.4818	0.505109	0.494891
1989-90	0.7043	0.5692	0.4308	0.5544	0.4456	0.5512	0.4488	0.537282	0.462718
1990-91	0.7073	0.5632	0.4368	0.5487	0.4513	0.5455	0.4545	0.531771	0.468229
1991-92	0.6946	0.5295	0.4705	0.5159	0.4841	0.5128	0.4872	0.499996	0.500004
1992-93	0.7050	0.4989	0.5011	0.4861	0.5139	0.4832	0.5168	0.471149	0.528851
1993-94	0.7084	0.5250	0.4750	0.5116	0.4884	0.5086	0.4914	0.495925	0.504075
1994-95	0.7073	0.5138	0.4862	0.5008	0.4992	0.4978	0.5022	0.485471	0.514529
1995-96	0.6924	0.5310	0.4690	0.5176	0.4824	0.5145	0.4855	0.501802	0.498198

Table 3.7(a): Net value added per unit of labour cost (in Rs., at current prices)

Year	NVA per unit of labour cost			
	$(NVA_{e,i}/L^1)$	$(NVA_{e,i}/L^2)$	$(NVA_{e,i}/L^3)$	$(NVA_{e,i}/L^4)$
1980-81	1.58	1.62	1.63	1.67
1981-82	1.63	1.67	1.68	1.73
1982-83	1.64	1.68	1.69	1.74
1983-84	1.73	1.77	1.78	1.83
1984-85	1.68	1.72	1.73	1.78
1985-86	1.69	1.73	1.75	1.79
1986-87	1.69	1.73	1.74	1.79
1987-88	1.78	1.83	1.84	1.89
1988-89	1.88	1.93	1.94	1.99
1989-90	1.87	1.92	1.93	1.98
1990-91	1.93	1.98	1.99	2.04
1991-92	2.05	2.11	2.12	2.17
1992-93	2.13	2.19	2.20	2.26
1993-94	2.13	2.18	2.19	2.25
1994-95	2.14	2.20	2.21	2.27
1995-96	2.13	2.19	2.20	2.26

Table 3.7(b): Net value added per unit of labour cost (in Rs., at constant prices)

year	NVA per unit of labour cost			
	$(NVA_{e,i}/L^1)$	$(NVA_{e,i}/L^2)$	$(NVA_{e,i}/L^3)$	$(NVA_{e,i}/L^4)$
1980-81	1.58	1.62	1.63	1.67
1981-82	1.69	1.74	1.75	1.80
1982-83	1.70	1.75	1.76	1.81
1983-84	1.79	1.84	1.85	1.90
1984-85	1.65	1.69	1.70	1.75
1985-86	1.65	1.69	1.70	1.75
1986-87	1.58	1.63	1.64	1.68
1987-88	1.68	1.73	1.74	1.78
1988-89	1.87	1.92	1.93	1.98
1989-90	1.76	1.80	1.81	1.86
1990-91	1.78	1.82	1.83	1.88
1991-92	1.89	1.94	1.95	2.00
1992-93	2.00	2.06	2.07	2.12
1993-94	1.90	1.95	1.97	2.02
1994-95	1.95	2.00	2.01	2.06
1995-96	1.88	1.93	1.94	1.99

Table 3.8(a): Surplus per unit of labour cost (in Rs., at current prices)

Year	surplus per unit of labour cost			
	(S^1/L^1)	(S^2/L^2)	(S^3/L^3)	(S^4/L^4)
1980-81	0.58	0.62	0.63	0.67
1981-82	0.63	0.67	0.68	0.73
1982-83	0.64	0.68	0.69	0.74
1983-84	0.73	0.77	0.78	0.83
1984-85	0.68	0.72	0.73	0.78
1985-86	0.69	0.73	0.75	0.79
1986-87	0.69	0.73	0.74	0.79
1987-88	0.78	0.83	0.84	0.89
1988-89	0.88	0.93	0.94	0.99
1989-90	0.87	0.92	0.93	0.98
1990-91	0.93	0.98	0.99	1.04
1991-92	1.05	1.11	1.12	1.17
1992-93	1.13	1.19	1.20	1.26
1993-94	1.13	1.18	1.19	1.25
1994-95	1.14	1.20	1.21	1.27
1995-96	1.13	1.19	1.20	1.26

Table 3.8(b): Surplus per unit of labour cost (in Rs., at constant prices)

year	surplus per unit of labour cost			
	(S^1/L^1)	(S^2/L^2)	(S^3/L^3)	(S^4/L^4)
1980-81	0.58	0.62	0.63	0.67
1981-82	0.69	0.74	0.75	0.80
1982-83	0.70	0.75	0.76	0.81
1983-84	0.79	0.84	0.85	0.90
1984-85	0.65	0.69	0.70	0.75
1985-86	0.65	0.69	0.70	0.75
1986-87	0.58	0.63	0.64	0.68
1987-88	0.68	0.73	0.74	0.78
1988-89	0.87	0.92	0.93	0.98
1989-90	0.76	0.80	0.81	0.86
1990-91	0.78	0.82	0.83	0.88
1991-92	0.89	0.94	0.95	1.00
1992-93	1.00	1.06	1.07	1.12
1993-94	0.90	0.95	0.97	1.02
1994-95	0.95	1.00	1.01	1.06
1995-96	0.88	0.93	0.94	0.99

Table 3.9(a): Net value added per worker (in Rs., at current prices)

Year	NVA per worker			
	$NVA_{a,l}/(W^1+F^1)$	$NVA_{a,l}/(W^3+F^2)$	$NVA_{a,l}/(W^1+F^3)$	$NVA_{a,l}/(W^3+F^4)$
1980-81	2617.78	2319.72	2706.08	2395.00
1981-82	2874.43	2546.86	2971.07	2629.38
1982-83	2961.55	2623.74	3060.78	2708.61
1983-84	3533.94	3130.48	3651.97	3231.57
1984-85	3662.32	3243.82	3784.22	3348.39
1985-86	3822.88	3385.64	3949.70	3494.59
1986-87	3967.64	3513.43	4098.81	3626.29
1987-88	4373.30	3872.20	4517.38	3996.34
1988-89	5355.13	4740.96	5530.94	4892.67
1989-90	5793.47	5128.43	5983.01	5292.21
1990-91	6650.91	5886.74	6867.72	6074.37
1991-92	7655.80	6775.37	7904.49	6990.89
1992-93	8340.59	7380.52	8610.53	7614.81
1993-94	9490.97	8397.49	9797.03	8663.50
1994-95	10762.76	9521.61	11108.55	9822.58
1995-96	11183.89	9892.99	11541.88	10205.02

Table 3.9(b): Net value added per worker (in Rs., at constant prices)

year	NVA per worker			
	$NVA_{a,l}/(W^1+F^1)$	$NVA_{a,l}/(W^3+F^2)$	$NVA_{a,l}/(W^1+F^3)$	$NVA_{a,l}/(W^3+F^4)$
1980-81	2617.78	2319.72	2706.08	2395.00
1981-82	2725.63	2415.02	2817.27	2493.26
1982-83	2622.80	2323.63	2710.68	2398.79
1983-84	2876.56	2548.15	2972.64	2630.44
1984-85	2805.04	2484.51	2898.41	2564.60
1985-86	2747.29	2433.07	2838.43	2511.37
1986-87	2634.79	2333.16	2721.89	2408.10
1987-88	2592.75	2295.67	2678.17	2369.27
1988-89	3002.53	2658.17	3101.10	2743.23
1989-90	2964.00	2623.76	3060.97	2707.56
1990-91	3019.38	2672.46	3117.81	2757.64
1991-92	2863.16	2533.89	2956.16	2614.49
1992-93	2986.59	2642.81	3083.25	2726.71
1993-94	3032.81	2683.39	3130.61	2768.39
1994-95	3118.20	2758.61	3218.38	2845.81
1995-96	2925.26	2587.61	3018.89	2669.22

Table 3.10(a): Surplus per worker (in Rs. crores, at current prices)

Year	Surplus per worker $S^1/(W^1+F^1)$	surplus per worker $S^2/(W^3+F^2)$	surplus per worker $S^3/(W^1+F^3)$	surplus per worker $S^4/(W^3+F^4)$
1980-81	957.95	888.48	1046.24	963.76
1981-82	1110.25	1025.64	1206.89	1108.16
1982-83	1151.80	1063.23	1251.04	1148.10
1983-84	1487.07	1365.50	1605.10	1466.59
1984-85	1478.51	1360.76	1600.42	1465.33
1985-86	1559.58	1434.04	1686.40	1542.98
1986-87	1618.05	1487.42	1749.22	1600.27
1987-88	1921.81	1758.31	2065.89	1882.46
1988-89	2510.58	2288.16	2686.40	2439.87
1989-90	2691.59	2453.73	2881.13	2617.52
1990-91	3199.73	2910.85	3416.55	3098.48
1991-92	3923.22	3556.83	4171.90	3772.35
1992-93	4431.97	4010.19	4701.91	4244.47
1993-94	5025.85	4547.29	5331.91	4813.30
1994-95	5736.76	5187.77	6082.55	5488.74
1995-96	5942.79	5373.67	6300.77	5685.70

Table 3.10(b): Surplus per worker (in Rs. crores, at constant prices)

year	Surplus per worker $S^1/(W^1+F^1)$	surplus per worker $S^2/(W^3+F^2)$	surplus per worker $S^3/(W^1+F^3)$	surplus per worker $S^4/(W^3+F^4)$
1980-81	957.95	888.48	1046.24	963.76
1981-82	1115.03	1026.22	1206.67	1104.47
1982-83	1083.95	996.71	1171.84	1071.87
1983-84	1272.79	1165.25	1368.86	1247.53
1984-85	1103.76	1017.52	1197.12	1097.61
1985-86	1079.38	994.86	1170.52	1073.15
1986-87	972.18	899.53	1059.29	974.47
1987-88	1050.20	965.55	1135.62	1039.15
1988-89	1395.59	1272.54	1494.17	1357.60
1989-90	1276.95	1169.04	1373.92	1252.83
1990-91	1318.74	1206.03	1417.17	1291.21
1991-92	1347.14	1226.66	1440.15	1307.26
1992-93	1496.73	1358.13	1593.39	1442.02
1993-94	1440.62	1310.47	1538.42	1395.48
1994-95	1515.99	1377.05	1616.17	1464.25
1995-96	1371.91	1248.19	1465.55	1329.80

Table 3.11(a): Different forms of surplus (in Rs. crores, at current prices)

Year	Operating surplus & mixed income (OS+MI)	rent (R)	interest (I)	profit [1] (P^1=OS+MI -R-I-L^1)	profit [2] (P^2=OS+MI -R-I-L^2)	profit [3] (P^3=OS+MI -R-I-L^3)	profit [4] (P^4=OS+MI -R-I-L^4)
1980-81	30844	512	1241	12905.07	13588.89	13733.77	14365.71
1981-82	34886	566	1515	15289.13	16029.15	16186.87	16872.13
1982-83	36720	649	1710	16066.43	16839.36	17005.08	17722.25
1983-84	45392	763	1903	21658.55	22548.66	22740.62	23568.17
1984-85	47615	818	2365	21547.02	22513.95	22723.69	23624.45
1985-86	50824	906	2657	23112.21	24132.55	24355.17	25307.59
1986-87	53874	920	3114	24315.27	25393.77	25630.45	26639.15
1987-88	61330	944	3459	29811.68	30957.42	31210.30	32284.01
1988-89	77968	1206	4193	40534.88	41888.49	42188.95	43459.97
1989-90	85922	1413	4680	44262.62	45765.51	46101.02	47515.00
1990-91	101514	1706	4226	55291.90	56994.44	57376.66	58981.63
1991-92	121144	1910	4945	69922.33	71797.18	72220.46	73991.33
1992-93	136015	2187	5395	81130.30	83129.27	83583.08	85474.89
1993-94	157917	2513	6197	94188.16	96513.25	97044.04	99248.80
1994-95	183195	2923	6453	110764.38	113429.12	114040.82	116572.58
1995-96	194254	3100	7220	116986.72	119816.04	120469.08	123162.43

Table 3.11(b): Different forms of surplus (in Rs. crores, at constant prices)

year	Operating surplus & mixed income (OS+MI)	rent (R)	interest (I)	profit [1] (P^1=OS+MI- R-I-L^1)	profit [2] (P^2=OS+MI- R-I-L^2)	profit [3] (P^3=OS+MI- R-I-L^3)	profit [4] (P^4=OS+MI- R-I-L^4)
1980-81	30844.00	512.00	1241.00	12905.07	13588.89	13733.77	14365.71
1981-82	31849.05	516.73	1383.11	13958.15	14633.75	14777.74	15403.35
1982-83	31223.45	551.85	1454.03	13661.47	14318.71	14459.62	15069.44
1983-84	35565.76	597.83	1491.05	16970.01	17667.44	17817.84	18466.24
1984-85	37094.35	637.26	1842.45	16786.16	17539.44	17702.84	18404.57
1985-86	37454.08	667.66	1958.04	17032.24	17784.17	17948.23	18650.10
1986-87	38121.91	651.00	2203.51	17205.79	17968.95	18136.43	18850.20
1987-88	38590.72	593.99	2176.51	18758.43	19479.36	19638.48	20314.09
1988-89	44045.46	681.29	2368.70	22898.85	23663.52	23833.26	24551.28
1989-90	46731.51	768.51	2545.37	24073.68	24891.08	25073.56	25842.60
1990-91	50023.16	840.67	2082.45	27246.25	28085.21	28273.56	29064.44
1991-92	49203.47	775.76	2008.45	28399.44	29160.92	29332.84	30052.09
1992-93	51845.42	833.63	2056.44	30924.78	31686.74	31859.72	32580.83
1993-94	56310.42	896.09	2209.74	33585.84	34414.92	34604.20	35390.37
1994-95	58399.65	931.81	2057.11	35309.92	36159.40	36354.40	37161.48
1995-96	57572.38	918.77	2139.84	34672.15	35510.70	35704.24	36502.49

Table 3.12(a): Surplus as a sum of rent, interest and profit (in Rs. crores, at current prices)

Year	Surplus[1] $S^1 = R+I+P^1$	Surplus[2] $S^2 = R+I+P^2$	Surplus[3] $S^3 = R+I+P^3$	Surplus[4] $S^4 = R+I+P^4$
1980-81	14658.07	15341.89	15486.77	16118.71
1981-82	17370.13	18110.15	18267.87	18953.13
1982-83	18425.43	19198.36	19364.08	20081.25
1983-84	24324.55	25214.66	25406.62	26234.17
1984-85	24730.02	25696.95	25906.69	26807.45
1985-86	26675.21	27695.55	27918.17	28870.59
1986-87	28349.27	29427.77	29664.45	30673.15
1987-88	34214.68	35360.42	35613.30	36687.01
1988-89	45933.88	47287.49	47587.95	48858.97
1989-90	50355.62	51858.51	52194.02	53608.00
1990-91	61223.90	62926.44	63308.66	64913.63
1991-92	76777.33	78652.18	79075.46	80846.33
1992-93	88712.30	90711.27	91165.08	93056.89
1993-94	102898.16	105223.25	105754.04	107958.80
1994-95	120140.38	122805.12	123416.82	125948.58
1995-96	127306.72	130136.04	130789.08	133482.43

Table 3.12(b): Surplus as a sum of rent, interest and profit (in Rs. crores, at constant prices)

year	Surplus[1] $S^1 = R+I+P^1$	Surplus[2] $S^2 = R+I+P^2$	Surplus[3] $S^3 = R+I+P^3$	Surplus[4] $S^4 = R+I+P^4$
1980-81	14658.07	15341.89	15486.77	16118.71
1981-82	15858.00	16533.59	16677.59	17303.19
1982-83	15667.36	16324.60	16465.51	17075.33
1983-84	19058.89	19756.31	19906.72	20555.12
1984-85	19265.87	20019.14	20182.55	20884.28
1985-86	19657.94	20409.87	20573.93	21275.80
1986-87	20060.30	20823.46	20990.94	21704.70
1987-88	21528.93	22249.87	22408.98	23084.59
1988-89	25948.83	26713.51	26883.25	27601.27
1989-90	27387.56	28204.96	28387.44	29156.48
1990-91	30169.37	31008.33	31196.68	31987.56
1991-92	31183.64	31945.13	32117.04	32836.29
1992-93	33814.85	34576.80	34749.79	35470.89
1993-94	36691.67	37520.76	37710.03	38496.21
1994-95	38298.84	39148.32	39343.32	40150.40
1995-96	37730.76	38569.30	38762.85	39561.10

Table 3.13(i): Share of rent, interest and profit in total surplus

Year	share of rent ($R^1*=R/S^1$)	share of interest ($I^1*=I/S^1$)	share of profit ($P^1*=P^1/S^1$)
1980-81	0.0349	0.0847	0.8804
1981-82	0.0326	0.0872	0.8802
1982-83	0.0352	0.0928	0.8720
1983-84	0.0314	0.0782	0.8904
1984-85	0.0331	0.0956	0.8713
1985-86	0.0340	0.0996	0.8664
1986-87	0.0325	0.1098	0.8577
1987-88	0.0276	0.1011	0.8713
1988-89	0.0263	0.0913	0.8825
1989-90	0.0281	0.0929	0.8790
1990-91	0.0279	0.0690	0.9031
1991-92	0.0249	0.0644	0.9107
1992-93	0.0247	0.0608	0.9145
1993-94	0.0244	0.0602	0.9154
1994-95	0.0243	0.0537	0.9220
1995-96	0.0244	0.0567	0.9189

Table 3.13(ii): Share of rent, interest and profit in total surplus

Year	share of rent ($R^2*=R/S^2$)	share of interest ($I^2*=I/S^2$)	share of profit ($P^2*=P^2/S^2$)
1980-81	0.0334	0.0809	0.8857
1981-82	0.0313	0.0837	0.8851
1982-83	0.0338	0.0891	0.8771
1983-84	0.0303	0.0755	0.8943
1984-85	0.0318	0.0920	0.8761
1985-86	0.0327	0.0959	0.8714
1986-87	0.0313	0.1058	0.8629
1987-88	0.0267	0.0978	0.8755
1988-89	0.0255	0.0887	0.8858
1989-90	0.0272	0.0902	0.8825
1990-91	0.0271	0.0672	0.9057
1991-92	0.0243	0.0629	0.9128
1992-93	0.0241	0.0595	0.9164
1993-94	0.0239	0.0589	0.9172
1994-95	0.0238	0.0525	0.9237
1995-96	0.0238	0.0555	0.9207

Table 3.13(iii): Share of rent, interest and profit in total surplus

Year	share of rent ($R^3*=R/S^3$)	share of interest ($I^3*=I/S^3$)	share of profit ($P^3*=P^3/S^3$)
1980-81	0.0331	0.0801	0.8868
1981-82	0.0310	0.0829	0.8861
1982-83	0.0335	0.0883	0.8782
1983-84	0.0300	0.0749	0.8951
1984-85	0.0316	0.0913	0.8771
1985-86	0.0325	0.0952	0.8724
1986-87	0.0310	0.1050	0.8640
1987-88	0.0265	0.0971	0.8764
1988-89	0.0253	0.0881	0.8865
1989-90	0.0271	0.0897	0.8833
1990-91	0.0269	0.0668	0.9063
1991-92	0.0242	0.0625	0.9133
1992-93	0.0240	0.0592	0.9168
1993-94	0.0238	0.0586	0.9176
1994-95	0.0237	0.0523	0.9240
1995-96	0.0237	0.0552	0.9211

Table 3.13(iv): Share of rent, interest and profit in total surplus

Year	share of rent ($R^4*=R/S^4$)	share of interest ($I^4*=I/S^4$)	share of profit ($P^4*=P^4/S^4$)
1980-81	0.0318	0.0770	0.8912
1981-82	0.0299	0.0799	0.8902
1982-83	0.0323	0.0852	0.8825
1983-84	0.0291	0.0725	0.8984
1984-85	0.0305	0.0882	0.8813
1985-86	0.0314	0.0920	0.8766
1986-87	0.0300	0.1015	0.8685
1987-88	0.0257	0.0943	0.8800
1988-89	0.0247	0.0858	0.8895
1989-90	0.0264	0.0873	0.8863
1990-91	0.0263	0.0651	0.9086
1991-92	0.0236	0.0612	0.9152
1992-93	0.0235	0.0580	0.9185
1993-94	0.0233	0.0574	0.9193
1994-95	0.0232	0.0512	0.9256
1995-96	0.0232	0.0541	0.9227

Table 3.14: Rate of Growth of Output and Net Value Added

Year	r.o.g. of X at current prices	r.o.g. of NVA at current prices	r.o.g. of X at constant prices	r.o.g. of NVA at constant prices
1981-82	0.1198	0.1227	0.0575	0.0646
1982-83	0.0526	0.0535	-0.0057	-0.0161
1983-84	0.1944	0.2202	0.0928	0.1215
1984-85	0.0649	0.0597	0.0084	-0.0029
1985-86	0.0759	0.0674	0.0079	0.0015
1986-87	0.0709	0.0613	-0.0055	-0.0193
1987-88	0.1145	0.1272	-0.0009	0.0063
1988-89	0.2239	0.2523	0.1598	0.1843
1989-90	0.0993	0.1064	0.0137	0.0096
1990-91	0.1649	0.1741	0.0374	0.0419
1991-92	0.1775	0.1773	-0.0125	-0.0301
1992-93	0.1107	0.1143	0.0511	0.0669
1993-94	0.1457	0.1639	0.0338	0.0387
1994-95	0.1542	0.1599	0.0534	0.0517
1995-96	0.0736	0.0629	-0.0198	-0.0404

Table 3.15: Rate of Growth of Surplus

Year	r.o.g. of S^1 at curr pr	r.o.g. of S^4 at curr pr	r.o.g. of S^1 at const pr	r.o.g. of S^4 at const pr
1981-82	0.1850	0.1758	0.1901	0.1719
1982-83	0.0608	0.0595	-0.0060	-0.0075
1983-84	0.3202	0.3064	0.2007	0.1903
1984-85	0.0167	0.0219	-0.1132	-0.1002
1985-86	0.0787	0.0770	0.0000	0.0000
1986-87	0.0610	0.0608	-0.0789	-0.0713
1987-88	0.2146	0.2032	0.1047	0.0907
1988-89	0.3360	0.3257	0.3590	0.3363
1989-90	0.0965	0.0974	-0.0642	-0.0560
1990-91	0.2158	0.2109	0.0562	0.0543
1991-92	0.2540	0.2454	0.0448	0.0357
1992-93	0.1554	0.1510	0.1364	0.1285
1993-94	0.1599	0.1601	-0.0155	-0.0100
1994-95	0.1676	0.1666	0.0764	0.0735
1995-96	0.0596	0.0598	-0.0743	-0.0708

Table 3.16: Rate of Growth of Total Labour Cost

Year	r.o.g. of L^1 at curr pr	r.o.g. of L^1 at const pr	r.o.g. of L^4 at curr pr	r.o.g. of L^4 at const pr
1981-82	0.0867	-0.0079	0.0869	-0.0077
1982-83	0.0489	-0.0231	0.0491	-0.0229
1983-84	0.1565	0.0657	0.1567	0.0658
1984-85	0.0910	0.0847	0.0911	0.0849
1985-86	0.0598	0.0025	0.0600	0.0027
1986-87	0.0616	0.0194	0.0618	0.0195
1987-88	0.0670	-0.0512	0.0672	-0.0510
1988-89	0.1867	0.0654	0.1869	0.0656
1989-90	0.1152	0.0737	0.1154	0.0739
1990-91	0.1379	0.0310	0.1381	0.0312
1991-92	0.1062	-0.0883	0.1064	-0.0881
1992-93	0.0711	0.0052	0.0712	0.0054
1993-94	0.1685	0.0931	0.1687	0.0933
1994-95	0.1514	0.0293	0.1516	0.0295
1995-96	0.0667	-0.0083	0.0669	-0.0081

CHAPTER IV

TRENDS IN THE RATE OF RETURN IN INDIAN AGRICULTURE

In this chapter, firstly the trends in the rate of return on total capital stock advanced are discussed. Concern has been expressed often regarding the profitability of cultivation and its possible impact on agricultural development. Capital formation in agriculture is expected to be closely connected to the rate of return. Recently when the state is gradually pulling out leaving the forces of market to play a greater role, it becomes all the more important to see the possible relationship between the rate of return and investment in agriculture. In the second section of this chapter this relationship and its influence on the nature of agricultural development is discussed. We first, therefore, start with a brief discussion of trends in the rate of return.

Trends:

All the four alternative estimates of the rate of return in agriculture show a significant increase over the period starting from 1980-81 to 1995-96 (Table 4.1(a) and Table 4.1(b)). In the beginning these four estimates stood in a range of about 14.5 to 16 per cent. At current prices, profitability has increased over time to reach the range between 23 and a little more than 24 per cent in 1995-96. Thus it has registered a more than 8 percentage point increase during this period of sixteen years. At constant prices also it has experienced a significant increase. However, the increase has been a little smaller than that at current prices. At constant prices, it has reached about 21 to a little less than 23 per cent, showing an increase of a little less than 7 percentage points. This is an overall picture of the trends.

Table 4.1(a): Rate of Return (at current prices)

Year	rate of return			
	$r^1=S^1/(K_{fg}+K_{wa}^1)$	$r^2=S^2/(K_{fg}+K_{wa}^2)$	$r^3=S^3/(K_{fg}+K_{wa}^3)$	$r^4=S^4/(K_{fg}+K_{wa}^4)$
1980-81	0.1448	0.1524	0.1540	0.1611
1981-82	0.1531	0.1605	0.1621	0.1690
1982-83	0.1457	0.1525	0.1540	0.1605
1983-84	0.1713	0.1785	0.1800	0.1868
1984-85	0.1558	0.1626	0.1641	0.1706
1985-86	0.1488	0.1552	0.1566	0.1626
1986-87	0.1441	0.1502	0.1516	0.1574
1987-88	0.1575	0.1635	0.1648	0.1704
1988-89	0.1869	0.1932	0.1946	0.2007
1989-90	0.1838	0.1901	0.1915	0.1975
1990-91	0.1936	0.1998	0.2012	0.2071
1991-92	0.2164	0.2226	0.2240	0.2299
1992-93	0.2252	0.2312	0.2325	0.2382
1993-94	0.2369	0.2433	0.2447	0.2508
1994-95	0.2456	0.2521	0.2536	0.2598
1995-96	0.2310	0.2371	0.2385	0.2443

Table 4.1(b): Rate of Return (at constant prices)

Year	rate of return			
	$r^1=S^1/(K_{fg}+K_{wa}^1)$	$r^2=S^2/(K_{fg}+K_{wa}^2)$	$r^3=S^3/(K_{fg}+K_{wa}^3)$	$r^4=S^4/(K_{fg}+K_{wa}^4)$
1980-81	0.1448	0.1524	0.1540	0.1611
1981-82	0.1689	0.1764	0.1780	0.1850
1982-83	0.1645	0.1716	0.1731	0.1798
1983-84	0.1931	0.2006	0.2023	0.2093
1984-85	0.1648	0.1725	0.1741	0.1813
1985-86	0.1628	0.1703	0.1720	0.1791
1986-87	0.1473	0.1547	0.1564	0.1634
1987-88	0.1632	0.1703	0.1718	0.1786
1988-89	0.2141	0.2217	0.2233	0.2305
1989-90	0.1947	0.2024	0.2041	0.2115
1990-91	0.2024	0.2102	0.2120	0.2195
1991-92	0.2112	0.2184	0.2200	0.2268
1992-93	0.2367	0.2439	0.2455	0.2523
1993-94	0.2266	0.2341	0.2358	0.2430
1994-95	0.2365	0.2441	0.2458	0.2530
1995-96	0.2137	0.2208	0.2225	0.2293

A closer view reflects the fact that this increase has not been achieved in a secular manner. From the Figure 4.1, it can easily be read that in two particular years, 1983-84 and 1988-89, it has experienced a significant leap. In 1983-84 the rate of return increased by about 2.5 to 3 percentage point and in 1988-89 it increased by 3 percentage points at current prices and by more than 5 percentage points at constant prices. After 1983-84, however, the increase could not be sustained and in a period of 3 years, it fell by 3 percentage points at current prices and by 4.5 percentage points at constant prices. After 1986-87, however, there is a continuous rise in the rate of return

till the end, except for the final year 1995-96, when it has decreased by about 1.5 to 2 percentage points. In the year 1992-93, it has received another major boost in this period of a continuous rise, when it increased by about 2.5 percentage points.

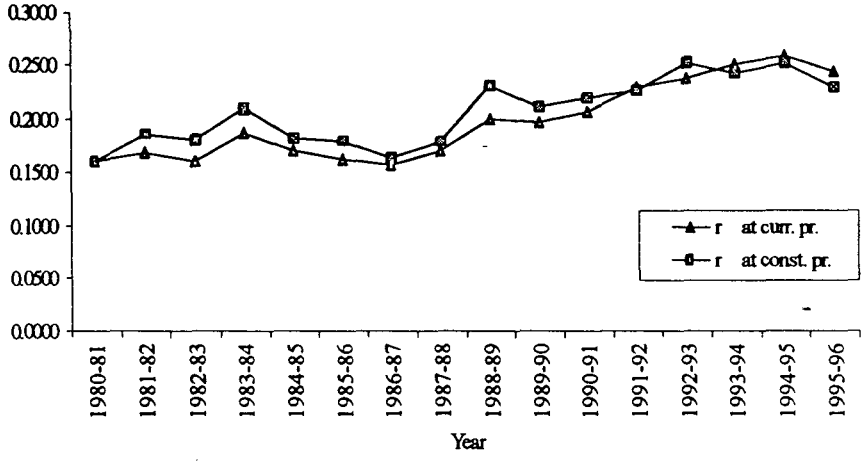

Figure 4.1: The Rate of Retur

Rate of Return and the Nature of Agricultural Development

We have already identified two phases as far as trends in rate of return are concerned. The first of these two is a phase of deceleration from 1983-84 to 1986-87. The second is a phase of continuous rise after 1986-87. During the whole period, the years 1983-84, 1988-89 and 1992-93 are clearly distinguishable, given their outstanding performance in this regard. If we look at the gross capital formation in agriculture (Table 4.2) at constant prices, it is clearly evident that the total gross capital formation is almost stagnant during the period between 1980-81 and 1990-91.

Table 4.2: Gross Capital Formation in Agriculture
(in Rs. crores)

[At 1980-81 prices]

Year	Gross Capital Formation		
	Total	Public Sector	Private Sector
1980-81	4636	1796	2840
1981-82	4503	1781	2722
1982-83	4590	1742	2848
1983-84	4101	1711	2390
1984-85	4549	1674	2875
1985-86	4325	1520	2805
1986-87	4011	1425	2586
1987-88	4414	1458	2956
1988-89	4346	1362	2984
1989-90	4353	1156	3197
1990-91	4594	1154	3440
1991-92	4729	1002	3727
1992-93	5372	1061	4311
1993-94	5031	1153	3878
1994-95	6256	1316	4940
1995-96	6961	1268	5693

Source: Central Statistical Organization.

In 1980-81 total gross capital formation was of a magnitude of Rs. 4636 crores. Thereafter it fluctuated, but never reached the same magnitude till 1991-92. In years 1983-84 and 1986-87 there is sharp decline. In 1984-85 there is a quantum jump. From 1990-91 onwards there is continuous increase except the year 1993-94 in which it dropped significantly. The share of the public sector in total gross capital formation has almost continuously declined. Trends in gross capital formation in the private sector explain the movement in total gross capital formation. In the private sector, the years 1983-84 and 1986-87 are marked by a sharp decline and 1984-85 by a substantial jump. But unlike the trends in total gross capital formation, that in the private sector has experienced a continuous rise after 1986-87, except the year 1993-94.

We have seen that the years 1983-84 and 1988-89 are those which have witnessed a sharp increase in the rate of return and also surplus inflation. We can include the year 1992-93 as well. In the year 1983-84 there is a significant drop in capital formation, considering both total as well as private sector only. But in the next year there is a quantum jump, possibly indicating responsiveness of investment to rate of return with a time lag of one year. But the same argument does not hold if we consider the phase during which there was deceleration in rate of return. Private sector investment increased substantially in 1987-88 after showing a sharp decline in 1986-87. There is no explanatory trend in the rate of return to this effect. Similarly for the year 1992-93, which experienced a jump in the rate of return we observe that capital formation has registered a significant rise in the same year, with the following year

experiencing a sharp decline. The only trend, however, which has some close resemblance with trends in rate of return is a continuous rise after 1986-87. There also a decline in the rate of return in 1989-90 is not matched by any corresponding trend in capital formation, either in the same year or in the following year. Trends in capital formation, therefore, cannot be explained on the basis of rate of return only; there must be some other factors influencing the former in a more direct manner. Without going into details of such a determination we shift our focus on to some other aspects of agricultural development.

Apart from the fixed capital investment, investment in other material inputs, which constitute a part of the working capital, is another area where the possible links with the rate of return should be investigated. Chemical fertilizers are one of the crucial inputs in agriculture. Trends in consumption of chemical fertilizers show that there is a continuous rise in consumption (Table 4.3). Starting from 5515.6 thousands tonnes in 1980-81 it has multiplied itself by about 2.5 times to reach 13876.1 thousand tonnes in 1995-96. Once again the years 1983-84 and 1988-89 stand distinctly apart from others as there is a substantial jump in the amount of consumption of chemical fertilizers. But during the period starting from 1990-91 to 1993-94 there is a stagnation, rather a small decline, in consumption of chemical fertilizers. The year 1992-93 witnessed a particularly sharp decline.

Table 4.3: All-India Consumption of Fertilizers and Electricity in Agriculture

Year	Fertilizers* (in ,000 tonnes)	Electricity (in million KWH)	Share of Agricultural Consumption of Electricity in Total Consumption
1980-81	5515.6	NA	NA
1981-82	6064.1	NA	NA
1982-83	6388.3	17817	18.64
1983-84	7710.1	18234	17.81
1984-85	8211	20960	18.38
1985-86	8474.1	23422	19.04
1986-87	8644.9	29444	21.66
1987-88	8784.3	35267	24.22
1988-89	11040	38878	24.27
1989-90	11568.2	44056	25.12
1990-91	12546.2	50321	26.44
1991-92	12728	58557	28.2
1992-93	12154.5	63328	28.7
1993-94	12366	70699	29.64
1994-95	13563.5	79301	30.54
1995-96	13876.1	85732	30.95

Source: Agricultural Statistics at a Glance (1999).
* Total of N, P_2O_5 and K_2O.

Trends in consumption of electricity show a continuous increase over the period. Between the years 1982-83 and 1995-96, it has increased by roughly five times in terms of physical units. The second half of the eighties and the nineties have experienced a sharp increase. Share of agricultural consumption in total consumption of electricity has also increased from 18.64 per cent in 1982-83 to about 31 per cent in 1995-96.

The quantum jump in total output, net value added and surplus, in years 1983-84, 1988-89 and 1992-93, apart from an overall increase, coincide with trends in yield of all crops taken together (Table 4.4). The same is true for yield of foodgrains also. In 1983-84, this jump was mostly accounted for by a jump in yield of foodgrains whereas in 1988-89 and 1992-93, it is equally distributed between food grain and non-foodgrain crops.

The consumption of chemical fertilizers is closely related to the movements of yield, total output and net value added except for the year 1992-93, in which consumption of chemical fertilizers fell considerably. Comparing these with trends in

Table 4.4: Index Number of Yield
(Base: Triennium ending 1981-82 = 100)

Year	Yield		
	Foodgrains	Non-foodgrains	All crops
Weights	(62.92)	(37.08)	(100)
1980-81	105.1	99.2	102.9
1981-82	105.9	106.4	106.1
1982-83	104.9	101.3	103.6
1983-84	117.8	105.7	113.3
1984-85	115.5	113.6	114.8
1985-86	120.6	108.3	116.0
1986-87	114.9	108.3	112.4
1987-88	117.2	110.2	114.4
1988-89	134.2	124.8	130.5
1989-90	135.5	126.7	131.9
1990-91	137.8	128.0	133.8
1991-92	136.5	123.7	131.0
1992-93	142.0	130.2	137.2
1993-94	146.5	132.7	140.7
1994-95	150.4	138.9	145.5
1995-96	143.1	135.7	139.8

Source: Agricultural Statistics at a Glance (1999)

rate of return indicates that instead of being determined by the trends in rate of return, trends in use of these intermediate inputs possibly explain the trends in the former. A quantum jump in yield, output, NVA, surplus and rate of return coincides with increased consumption of chemical fertilizers, but there is no indication that increased surplus or rate of return always lead to increased consumption of chemical fertilizers.

Consumption of these inputs are affected to a considerable extent by other variables, movements in which are connected with the macroeconomic variables characterising a particular kind of development strategy. The early nineties has witnessed fiscal contraction as a part of the structural adjustment programme. Reduction in government expenditure in an attempt to reduce fiscal deficit has resulted in massive cut in subsidies. Since a major share of these subsidies is accounted for by subsidies on fertilizers, the latter has decreased considerably. Now, given the highly unequal distribution of resources among cultivating households this has affected the prospects for less fortunate ones. The typical argument given in favour of these contractionary fiscal policies is that resource flow, i.e. state expenditure, to agriculture is not inadequate but is rather sufficient, and the problem lies in its efficient distribution to different uses. Following this line of argument, a shift in the expenditure pattern was sought and that was a transfer away from current expenditure to capital expenditure. Reduction in subsidies was an inevitable outcome.

It is clear that the understanding of the entire problem of agrarian development was extremely partial and the source of all evils was discovered in inefficient allocation of resources. The whole issue of resource generation was skipped. Such a static approach could never be effective in understanding and resolving the problems of agrarian development and its financing. Reduction in subsidies on agricultural inputs and a stagnation in gross capital formation by government vindicate the arguments given above. Given a positive correlation between state expenditure and private sector expenditure this is bound to affect agrarian development adversely. This is not to deny, however, that there has been an increase in private capital expenditure, but to emphasise that the growth potential of the rural economy cannot be realised without active assistance from the government in this regard. The importance of an active state participation in agricultural development will be more clear if we look at

the factors which determine the rate of return, apart from the factors which determine surplus.

Rate of return is defined over a turnover period. This turnover period consists of two periods - *time period involved in production and that in circulation*, i.e., the time required for realisation of the surplus product in money value which is basically marketing of the agricultural produce. First of these two, *production time*, can further be divided into two parts - *working time* and *idle time*. Production time can be defined as time required to finish one cycle of production, i.e. physically transforming agricultural inputs into final products. This involves a period of active involvement of working capital in the sense that a continuous supply of working capital, i.e., different inputs including labour input, is required. This can be termed as working time. Idle time during production period is that time during which no additional capital advances are required, but that amount of working capital which has already been advanced remains tied to the process and cannot be taken out. Growing period of crops during which no additional inputs are applied can be said to be idle one.

Reduction in production time will definitely increase the rate of return as it will raise the number of turnovers of capital. Given the nature of cultivation activities, this cannot be increased indefinitely and natural conditions put a constraint on it. It can be said, however, that the limit posed by natural constraints has not been reached yet in Indian agriculture and there remains enough potentialities to increase the cropping intensity. We can add that extension of irrigation area will definitely increase cropping intensity and in turn rate of return. In 1988-89, increase is net irrigated area to 46.15 million hectares from 42.89 million hectares in 1987-89, was accompanied by a jump in area sown more than once from 36.65 million hectares to 40.39 million hectares.[1] Realisation of an increase in net irrigated area into increase in cropping intensity, will, however, depend on availability of other institutional supports also.

Extension is net irrigated area will ask for increased capital expenditure going into fixed capital formation. In underdeveloped economics, at the early stages of

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[1] . Agricultural Statistics in India, DES, Department of Agriculture and Cooperation, Ministry of Agriculture, p. 95.

capitalist development, financing of such huge capital expenditures will require increased state expenditure. Alternative source, i.e. private financing of this capital expenditure will require that a sufficient degree of concentration of aggregate social capital has already been attained. Development of agricultural credit system is important in so far as it facilitates the concentration of capital in a society characterised by extreme inequality. However once again mere concentration of surplus, even if sufficiently large, will not ensure its translation into productive investment. The kind of institutional structure generating and facilitating concentration of social surplus will have its bearing on productive accumulation. Agrarian structure characterised by dominance of usurious moneylenders and absentee landlords will certainly obstruct productive accumulation of surplus.

Reduction in working as well as idle time can also be achieved by technological improvements. High yield variety seeds of crops, taking less time to grow and ripen, as well as fertilizers facilitating a quicker maturity period, can reduce working as well as idle time resulting in a larger number of turnovers. This will also ask for a greater degree of monetisation of inputs. To have a broad-based agricultural development, however, institutional support for such a large degree of monetisation, particularly for middle and smaller peasantry, becomes necessary.

Reduction in the time of circulation requires adequate marketing facilities. Expansion in agricultural marketing cooperative can help considerably in this regard. In fact this can help in two major ways. First, it will reduce the cost of warehousing facilities on the part of private, particularly small producers. Secondly, it can help in getting rid of local traders, who eat up a large part of surplus produced in agriculture and prevent its productive accumulation. Extension of credit facilities will also assist the extension of marketing facilities. Lack of sufficient amount of working capital at the right time results in reduction in the scale of operation, which usually happens, in a differentiated peasantry with small and marginal farmers.

Effects on the rate of return through effects on requirements of working capital can take place through any of these methods. Changes in prices, however, can exert pressure separately. An increase in prices of output, resulting in increased availability of working capital, assuming that prices of inputs remain the same, will reduce the requirements of advanced working capital to carry out the production process on the

same scale or will facilitate an increase in the scale of operation. On the contrary, increase in the prices of inputs, by raising the working capital requirement, results in increased pressure on credit requirement or a reduction in the scale of operation. Movements of terms of trade, if we take it as a proxy of relative price movement, shows that since the early nineties it has moved in favour of agriculture, showing that inputs have become relatively cheaper. This, by resulting in less working capital requirements to carry on with the same scale of operation, can result in extension of the scale of operation considerably.

One more point about the nature of agricultural development can be made. If we look at the composition of capital, i.e. share of fixed capital as well as capital advanced for the purchase of material inputs, and share of working capital advanced for the purchase of labour power;[2] there is an indication that the nature of the progress so far has been of the labour displacing variety. At current prices, share of the farmer

Table 4.5: Composition of Capital

Year	At current prices		At constant prices	
	$K/(K+L^1)$	$K/(K+L^4)$	$K/(K+L^1)$	$K/(K+L^4)$
1980-81	0.7683	0.7787	0.7683	0.7787
1981-82	0.7757	0.7858	0.7753	0.7854
1982-83	0.7873	0.7970	0.7838	0.7936
1983-84	0.7826	0.7924	0.7766	0.7866
1984-85	0.7873	0.7969	0.7669	0.7772
1985-86	0.8003	0.8095	0.7701	0.7803
1986-87	0.8062	0.8151	0.7698	0.7799
1987-88	0.8137	0.8224	0.7809	0.7907
1988-89	0.8047	0.8137	0.7761	0.7860
1989-90	0.8044	0.8133	0.7666	0.7768
1990-91	0.8078	0.8166	0.7645	0.7747
1991-92	0.8102	0.8188	0.7841	0.7936
1992-93	0.8170	0.8254	0.7866	0.7961
1993-94	0.8071	0.8158	0.7743	0.7841
1994-95	0.8032	0.8120	0.7751	0.7849
1995-96	0.8129	0.8214	0.7818	0.7913

Note: L^1 and L^4 denote the estimates of the total labour cost in agriculture proper and livestock production based on two different methods (see Chapter II for detail)

has increased from a little less than 77 to 78 per cent to a little more than 81 to 82 per cent (Table 4.5). At constant prices, this displacement has been of a smaller degree.

[2] . This is not to say of a wholly capitalist agriculture and the estimation exercise takes into account imputed valued of family labour, lying outside the ambit of capitalist farming.

The upshot of the whole discussion is that, looking at the trends in the rate of return and surplus, on the one hand, and other macroeconomic variables, on the other, one can safely suggest that increasing the rate of return in agriculture and also at the same time, the productive accumulation of the increasing surplus requires the active intervention of the state. The nature of such an intervention should be a comprehensive one. It must take into account the economic activities of the state, i.e. state expenditure on capital formation etc. but at the same time, and more importantly, the institutional support to agrarian development. What is required is the creation of an environment conducive for the cultivators, providing sufficient incentives for surplus generation and its productive accumulation. It is not only that the existing flow of resources should be made more broad-based, but the existing stock of resources, including land, should be redistributed in order to make the whole development strategy more broad-based. In the absence of any redistributive policy, no long-term perspective of development can possibly be visualised.

Appendix 4.1

Appendix Table 1: Stock of Gross Fixed Capital (in Rs. crores)

	at current prices			at constant prices		
	net stock of fixed capital	Consumption of fixed capital	Gross fixed capital stock	net stock of fixed capital	consumption of fixed capital	gross fixed capital stock
Year	K_{fn}	q	$K_{fg} = K_{fn} + q$	K_{fn}	q	$K_{fg} = K_{fn} + q$
1980-81	62778	2410	65188	62778	2410	65188
1981-82	71512	2765	74277	64622	2502	67124
1982-83	81765	3151	84916	66418	2613	69031
1983-84	91626	3512	95138	67675	2700	70375
1984-85	103402	3924	107326	69178	2784	71962
1985-86	120006	4577	124583	70382	2865	73247
1986-87	132353	5007	137360	71302	2910	74212
1987-88	149742	5501	155243	72596	2957	75553
1988-89	166668	6134	172802	73857	3015	76872
1989-90	185998	7060	193058	75035	3116	78151
1990-91	216734	7903	224637	76162	3218	79380
1991-92	240897	9475	250372	77464	3366	80830
1992-93	271426	10961	282387	79177	3546	82723
1993-94	294600	12006	306606	80514	3669	84183
1994-95	330650	13763	344413	82719	3904	86623
1995-96	377942	16031	393973	85298	4198	89496

Appendix Table 2: Composition of Capital

	at current prices				at constant prices			
Year	$K/(K+L^1)$	$K/(K+L^2)$	$K/(K+L^3)$	$K/(K+L^4)$	$K/(K+L^1)$	$K/(K+L^2)$	$K/(K+L^3)$	$K/(K+L^4)$
1980-81	0.7683	0.7731	0.7742	0.7787	0.7683	0.7731	0.7742	0.7787
1981-82	0.7757	0.7804	0.7814	0.7858	0.7753	0.7800	0.7810	0.7854
1982-83	0.7873	0.7918	0.7928	0.7970	0.7838	0.7884	0.7893	0.7936
1983-84	0.7826	0.7872	0.7882	0.7924	0.7766	0.7812	0.7822	0.7866
1984-85	0.7873	0.7917	0.7927	0.7969	0.7669	0.7717	0.7727	0.7772
1985-86	0.8003	0.8046	0.8055	0.8095	0.7701	0.7748	0.7758	0.7803
1986-87	0.8062	0.8103	0.8112	0.8151	0.7698	0.7744	0.7755	0.7799
1987-88	0.8137	0.8177	0.8186	0.8224	0.7809	0.7854	0.7864	0.7907
1988-89	0.8047	0.8089	0.8098	0.8137	0.7761	0.7806	0.7816	0.7860
1989-90	0.8044	0.8085	0.8094	0.8133	0.7666	0.7713	0.7723	0.7768
1990-91	0.8078	0.8118	0.8128	0.8166	0.7645	0.7692	0.7703	0.7747
1991-92	0.8102	0.8141	0.8150	0.8188	0.7841	0.7885	0.7894	0.7936
1992-93	0.8170	0.8208	0.8217	0.8254	0.7866	0.7909	0.7919	0.7961
1993-94	0.8071	0.8111	0.8120	0.8158	0.7743	0.7788	0.7798	0.7841
1994-95	0.8032	0.8072	0.8082	0.8120	0.7751	0.7796	0.7806	0.7849
1995-96	0.8129	0.8168	0.8176	0.8214	0.7818	0.7861	0.7871	0.7913

Appendix Table 3(a): Total Working Capital (in Rs. crores, at current prices)

Year	material costs of production including consumption of fixed capital	Total material working capital	total working capital			
	$M_{a,1}$	$K_{mw}=M_{a,1}-q+v$	$K_{tw}^{1}=K_{mw}+L^{1}$	$K_{tw}^{2}=K_{mw}+L^{2}$	$K_{tw}^{3}=K_{mw}+L^{3}$	$K_{tw}^{4}=K_{mw}+L^{4}$
1980-81	17657	19032	44429.93	43746.11	43601.23	42969.29
1981-82	19657	21160	48760.87	48020.85	47863.13	47177.87
1982-83	20651	22272	51222.57	50449.64	50283.92	49566.75
1983-84	23448	25401	58882.45	57992.34	57800.38	56972.83
1984-85	25269	27859	64385.98	63419.05	63209.31	62308.55
1985-86	27702	30585	69296.79	68276.45	68053.83	67101.41
1986-87	30290	33578	74674.73	73596.23	73359.55	72350.85
1987-88	32879	36319	80169.32	79023.58	78770.70	77696.99
1988-89	38018	41664	93699.12	92345.51	92045.05	90774.03
1989-90	41096	45644	103675.38	102172.49	101836.98	100423.00
1990-91	46874	52940	118975.10	117272.56	116890.34	115285.37
1991-92	55211	61381	134427.67	132552.82	132129.54	130358.67
1992-93	60777	66900	145136.70	143137.73	142683.92	140792.11
1993-94	66598	75870	167287.84	164962.75	164431.96	162227.20
1994-95	75758	85209	190464.62	187799.88	187188.18	184656.42
1995-96	83742	93843	206118.28	203288.96	202635.92	199942.57

Appendix Table 3(b): Total Working Capital (in Rs. crores, at constant prices)

Year	material costs of production including consumption of fixed capital	total material working capital	total working capital			
	$M_{a,1}$	$K_{mw}=M_{a,1}-q+v$	$K_{tw}^{1}=K_{mw}+L^{1}$	$K_{tw}^{2}=K_{mw}+L^{2}$	$K_{tw}^{3}=K_{mw}+L^{3}$	$K_{tw}^{4}=K_{mw}+L^{4}$
1980-81	17657	19032	44429.93	43746.11	43601.23	42969.29
1981-82	18387	19823	45021.12	44345.52	44201.53	43575.92
1982-83	18726	20217	44834.02	44176.78	44035.87	43426.05
1983-84	19264	20808	47041.55	46344.13	46193.72	45545.32
1984-85	19957	21681	50137.25	49383.98	49220.57	48518.84
1985-86	20413	22310	50838.15	50086.22	49922.16	49220.29
1986-87	20946	23014	52094.56	51331.40	51163.92	50450.15
1987-88	20593	22813	50404.97	49684.03	49524.92	48849.31
1988-89	22749	25000	54395.53	53630.86	53461.12	52743.10
1989-90	23287	25513	57075.28	56257.88	56075.41	55306.36
1990-91	23913	26271	58811.19	57972.23	57783.88	56992.99
1991-92	24636	26908	56576.41	55814.93	55643.01	54923.76
1992-93	25010	27214	57035.82	56273.86	56100.88	55379.77
1993-94	25560	27668	60265.99	59436.91	59247.63	58461.46
1994-95	27029	29047	62600.82	61751.34	61556.34	60749.26
1995-96	27835	29743	63018.79	62180.25	61986.70	61188.45

Appendix Table 4(a): Working Capital Advanced (in Rs. crores, at current pricers)

Year	net sown area	gross sown area	working capital advanced on NSA			
	NSA	GSA	$K_{wa}^1=K_{tw}^1\times$ NSA/GSA	$K_{wa}^2=K_{tw}^2\times$NSA /GSA	$K_{wa}^3=K_{tw}^3\times$ NSA/GSA	$K_{wa}^4=K_{tw}^4\times$ NSA/GSA
1980-81	140	172.63	36031.92	35477.36	35359.86	34847.36
1981-82	141.93	176.75	39154.91	38560.68	38434.03	37883.76
1982-83	140.22	172.75	41577.01	40949.63	40815.12	40232.99
1983-84	142.84	179.56	46841.00	46132.91	45980.21	45321.90
1984-85	140.89	176.33	51445.25	50672.66	50505.07	49785.36
1985-86	140.9	178.46	54712.08	53906.49	53730.72	52978.76
1986-87	139.58	176.41	59084.51	58231.17	58043.91	57245.80
1987-88	134.09	170.74	62960.66	62060.86	61862.26	61019.03
1988-89	141.89	182.28	72937.07	71883.39	71649.50	70660.12
1989-90	142.34	182.27	80963.15	79789.50	79527.49	78423.27
1990-91	143	185.74	91598.15	90287.37	89993.10	88757.44
1991-92	141.63	182.24	104472.07	103015.01	102686.06	101309.80
1992-93	142.72	185.7	111545.02	110008.71	109659.93	108205.98
1993-94	142.42	186.6	127680.25	125905.65	125500.53	123817.78
1994-95	142.96	188.05	144795.65	142769.85	142304.83	140380.12
1995-96	142.22	186.56	157129.83	154972.96	154475.13	152421.91

Appendix Table 4(b): Working Capital Advanced (in Rs. crores, at constant pricers)

Year	net sown area	gross sown area	working capital advanced on NSA			
	NSA	GSA	$K_{wa}^1=K_{tw}^1\times$ NSA/GSA	$K_{wa}^2=K_{tw}^2\times$NSA /GSA	$K_{wa}^3=K_{tw}^3\times$ NSA/GSA	$K_{wa}^4=K_{tw}^4\times$ NSA/GSA
1980-81	140	172.63	36031.92	35477.36	35359.86	34847.36
1981-82	141.93	176.75	36151.89	35609.39	35493.76	34991.40
1982-83	140.22	172.75	36391.47	35857.99	35743.62	35248.63
1983-84	142.84	179.56	37421.56	36866.76	36747.11	36231.31
1984-85	140.89	176.33	40060.33	39458.45	39327.89	38767.20
1985-86	140.9	178.46	40138.38	39544.71	39415.18	38861.03
1986-87	139.58	176.41	41218.52	40614.68	40482.17	39917.42
1987-88	134.09	170.74	39585.35	39019.17	38894.20	38363.61
1988-89	141.89	182.28	42342.45	41747.21	41615.08	41056.17
1989-90	142.34	182.27	44571.77	43933.43	43790.93	43190.37
1990-91	143	185.74	45278.35	44632.43	44487.43	43878.53
1991-92	141.63	182.24	43969.03	43377.24	43243.63	42684.66
1992-93	142.72	185.7	43834.96	43249.36	43116.41	42562.20
1993-94	142.42	186.6	45997.23	45364.44	45219.98	44619.94
1994-95	142.96	188.05	47590.60	46944.81	46796.57	46183.00
1995-96	142.22	186.56	48041.02	47401.77	47254.23	46645.70

Appendix Table 5(a): Rate of Return (at current prices)

Year	rate of return			
	$r^1=S^1/(K_{fg}+K_{wa}^1)$	$r^2=S^2/(K_{fg}+K_{wa}^2)$	$r^3=S^3/(K_{fg}+K_{wa}^3)$	$r^4=S^4/(K_{fg}+K_{wa}^4)$
1980-81	0.1448	0.1524	0.1540	0.1611
1981-82	0.1531	0.1605	0.1621	0.1690
1982-83	0.1457	0.1525	0.1540	0.1605
1983-84	0.1713	0.1785	0.1800	0.1868
1984-85	0.1558	0.1626	0.1641	0.1706
1985-86	0.1488	0.1552	0.1566	0.1626
1986-87	0.1441	0.1502	0.1516	0.1574
1987-88	0.1575	0.1635	0.1648	0.1704
1988-89	0.1869	0.1932	0.1946	0.2007
1989-90	0.1838	0.1901	0.1915	0.1975
1990-91	0.1936	0.1998	0.2012	0.2071
1991-92	0.2164	0.2226	0.2240	0.2299
1992-93	0.2252	0.2312	0.2325	0.2382
1993-94	0.2369	0.2433	0.2447	0.2508
1994-95	0.2456	0.2521	0.2536	0.2598
1995-96	0.2310	0.2371	0.2385	0.2443

Appendix Table 5(b): Rate of Return (at constant prices)

year	rate of return			
	$r^1=S^1/(K_{fg}+K_{wa}^1)$	$r^2=S^2/(K_{fg}+K_{wa}^2)$	$r^3=S^3/(K_{fg}+K_{wa}^3)$	$r^4=S^4/(K_{fg}+K_{wa}^4)$
1980-81	0.1448	0.1524	0.1540	0.1611
1981-82	0.1689	0.1764	0.1780	0.1850
1982-83	0.1645	0.1716	0.1731	0.1798
1983-84	0.1931	0.2006	0.2023	0.2093
1984-85	0.1648	0.1725	0.1741	0.1813
1985-86	0.1628	0.1703	0.1720	0.1791
1986-87	0.1473	0.1547	0.1564	0.1634
1987-88	0.1632	0.1703	0.1718	0.1786
1988-89	0.2141	0.2217	0.2233	0.2305
1989-90	0.1947	0.2024	0.2041	0.2115
1990-91	0.2024	0.2102	0.2120	0.2195
1991-92	0.2112	0.2184	0.2200	0.2268
1992-93	0.2367	0.2439	0.2455	0.2523
1993-94	0.2266	0.2341	0.2358	0.2430
1994-95	0.2365	0.2441	0.2458	0.2530
1995-96	0.2137	0.2208	0.2225	0.2293

CONCLUSION

An increasing trend in surplus generated is clearly visible in the estimates obtained in the present study. It is not only the absolute amount, but also its share in total output and net value added has increased over time. This increase has taken place not in a smooth manner, but amidst fluctuations. A reciprocal trend in the share of total labour cost shows decline over time. On the basis of these findings, possible link between trends in surplus and rural poverty was attempted to be investigated. This reflected a significant correlation between these two. Increasing trends in surplus has been found to be associated with increasing rural poverty. While analysing the rate of return, it was found that there is no significant relationship between gross capital formation and the former. Similarly, there was no definite evidence that increased use of material inputs, like chemical fertilizers, electricity, etc. was due to an increase in the rate of return. It seems more probable that increased consumption of chemical fertilizers resulted in significant jump in yield, total output, net value added and surplus, which in turn, resulted in an increase in the rate of return. In both cases, investment in fixed capital and investment in working material capital, the rate of return alone could not explain the trends. There are, possibly, other factors which affect the investment behaviour in a more significant way. The rate of return, however, can be raised in a number of ways; and active state intervention turns out to be essential to achieve this increase, given the institutional setting and underdeveloped capitalist farming.

Thus increase in the rate of return calls for state's participation in fixed capital formation at the early stages of agrarian development. Before the agricultural sector starts contributing to industrialisation in terms of a net surplus transfer to the latter, it may be necessary to have an inflow of capital resources into the farmer, raising its productive potential resulting in an increase in potential surplus, which is to be realised and transferred through appropriate policy instruments. At the same time, in order to translate increasing surplus into productive accumulation, institutional restructuring is also necessary. To make productive accumulation attractive, effective deterrence to unproductive, exploitative channels of investment should be imposed. Without radical land reforms and institutional support in terms of credit availability to

middle and smaller peasantry, no broad-based agrarian development programme can be thought of.

Since the early nineties, increase in the share of surplus in total output and in net value added, surplus per unit of labour cost, and surplus per worker have been associated with increasing incidence of poverty. Clearly, any programme envisaged exclusively for the growth of the agricultural sector cannot be effective in curtailing or even stopping the incidence of poverty to rise. Some studies have shown that growth itself cannot reduce poverty, rather in many cases has accentuated it, as most of the benefits are captured by the property owning classes. No supply side explanations, in terms of productivity and total output, even of foodgrains and coarse grains, can explain the trends in poverty. Non-farm employment and relative prices of foodgrains are found to be more significant variables influencing rural poverty. In a recent study Sen and Patnaik (1997) have shown that the relative food prices are the most significant explanatory variable[1]. Other variables which affect rural poverty in a significant manner are state development expenditure and agricultural income. Since the early nineties, during the most vigorous phase of contractionary fiscal policies under the neo-liberal regime, these variables have moved in a way so as to have an extremely adverse impact on rural poverty.

In an institutional setting characterised by an extremely unequal distribution of land and other productive resources, any growth strategy, dominated by large farmers and based on private ownership of irrigation facilities and other modern equipment, cannot be broad-based, and thus, cannot help in reducing the incidence of rural poverty. The nature of the agricultural development under such a strategy has been that of a labour-displacing. As mentioned before there are other factors which affect the rural labour market in manner so as to increase the supply of labour, further depressing labour incomes. Increased monetisation of inputs, eviction of tenants, ruin of traditional crafts, etc. have resulted in a situation in which there is a large inflow of labourers, who have been forced out of their previous occupations, into the labour market.

[1] Sen, Abhijit and Utsa Patnaik (1997), *Poverty in India*, Working Paper, Centre for Economic Studies and Planning, Jawaharlal Nehru University.

The above mentioned observations can be summarised as the following. In order to have a successful transition of agriculture, ever increasing amount of surplus and its reinvestment in agriculture is required. But given a particular kind of socio-economic structure, it cannot be achieved on its own. The state's participation, directly in economic activities as well as in transforming the existing institutional set up, is imperative. On the other hand, experience has shown that rural poverty has a close relationship with trends in surplus. Therefore, no development strategy ensuring high rate of growth alone, can ensure reduction in rural poverty. State intervention, once again, becomes necessary, and particularly; investment in rural development programmes with an emphasis on employment generation and ensuring the availability of foodgrains at low prices prove to be much effective in tackling poverty. Neo-liberal regime, by undermining state's role, clearly stands in opposition to any effective poverty-alleviation strategy. The requirement of state intervention and, at the same time, its undermining by the contemporary ruling economic policies indicates towards a deeper contradiction underlying the present social order.

In order to have a more accurate understanding of the problem of agricultural development, and consequently, of economic development in general, a more rigourous study of the dynamics of rural economy is needed. Once surplus is accepted as a tool of historical analysis, explaining structural changes over time, dynamics of generation, distribution and accumulation of surplus has to be explained in terms of relations of production and distribution. The nature and form of surplus have to say more about the potentialities of a successful transition.

Bibliography

Baran, Paul (1957): *The Political Economy of Growth*, Monthly Review Press, New York.

Bardhan, Pranab (1986): *Land, Labour and Rural Poverty*, Oxford University Press, Delhi.

Basu, Kaushik (1993): *The Less Developed Economy: A Critique of Contemporary Theory*, Oxford University Press, Delhi.

———— (1997): *Agrarian Questions*, Oxford University Press, Delhi.

Bender, Barbara (1978): 'Gatherer-hunter to Farmer: A Social Perspective' in *World Archaeology*, vol. 10, no. 2.

Bhaduri, Amit (1999): *Unconventional Economic Essays*, Oxford University Press, Delhi.

Bhardwaj, Krishna (1989): *Themes in Value and Distribution: Classical Theory Reappraised*, Oxford University Press, Delhi.

Binford, L. R. (1968): 'Post Pleistocene Adaptations' in S. R. Binford and L. R. Binford (eds.) *New Perspective in Archaeology*, Aldine Publishing Co., Chicago.

Byres, T. J. (1998): 'The Need for the Comparative Method in the Social Sciences: An Essay with the Agrarian Question in India in Mind' in Deepak Nayyar (ed.) *Economics as Ideology and Experience: Essays in Honour of Ashok Mitra*, Frank Cass, London.

Childe, V. Gordon (1984): *What Happened in History*, Penguin Books, Harmondsworth, England.

Crow, Ben (1999): 'Why is Agricultural Growth Uneven? Class and the Agrarian Surplus in Bangladesh' in Ben Rogaly, Barbara Harris White and Sugata Bose (eds.) *Sonar Bangla? Agricultural Growth and Agrarian Change in West Bengal and Bangladesh*, Sage, New Delhi.

Dobb, Maurice (1979): *Theories of value and distribution since Adam Smith: Ideology and Economic Theory*, Cambridge University Press- Vikas Student's Edition, Delhi.

Engels, F. (1977): *The Origin of the Family, Private Property and the State*, Progress Publishers, Moscow.

Flannery, K. V. (1969): 'Origins and Ecological Effects of Early Domestication in Iran and the Near East' in P. J. Ucko and G. W. Dimbleby (eds.) *The Domestication and Exploitation of Plants and Animals*, Duckworth, London.

Gough, Ian (1972): 'Productive and Unproductive Labour in Marx's Theory' in *New Left Review*,76, Nov - Dec.

Government of India, *Census of India*, 1981 and 1991, various publications.

———— Central Statistical Organisation, National Accounts Statistics, *Annual Reports*, various issues.

———— Central Statistical Organisation, *National Accounts Statistics - Factor Incomes*, 1994.

———— Central Statistical Organisation, *National Accounts Statistics - Sources and Methods*, 1989.

———— Ministry of Agriculture, Commission on Agricultural Costs and Prices, *Cost of Cultivation Studies*, various issues.

———— Ministry of Agriculture, Directorate of Economics and Statistics, *Agricultural Statistics at a Glance*, 1999.

———— Ministry of Finance, *Economic Survey*, various issues.

———— National Sample Survey Organisation, various *Survey Reports*.

Karshenas, Massoud (1994): 'Concept and Measurement of Agricultural Surplus: A New Accounting Framework With Application to Iran' in *Journal of Peasant Studies*, vol. 22, no. 2, January.

———— (1995): *Industrialization and Agricultural Surplus: A Comparative Study of Economic Development in Asia* , Oxford University Press, New York.

Keyder, Caglar (1975): 'Surplus' in *Journal of Peasant Studies*, vol. 2, no. 2.

Kosambi, D. D. (1994): *The Culture and Civilisation of Ancient India in Historical Outline*, Vikas Publishing House, New Delhi.

Kuznets, Simon (1965): *Economic Growth and Structure*, Oxford and IBH Publishing Company, New Delhi.

Lippit, Victor D. (1996): 'The Concept of the Surplus in Economic Development' in Lippit, V.D (ed.) *Radical Political Economy: Exploration in Alternative Economic Analysis, M.E.* Sharpe, Armonk.

Mandel, Ernest (1968): *Marxist Economic Theory*, Rupa and Company, Delhi.

Marx, Karl (1954): *Capital*, vol. I, Progress Publishers, Moscow.

———— (1956): *Capital*, vol. II, Progress Publishers, Moscow.

———— (1959): *Capital*, vol. III, Progress Publishers, Moscow.

———— (1963): *Theories of Surplus Value*, Part I, Progress Publishers, Moscow.

———— (1968): *Theories of Surplus Value*, Part II, Progress Publishers, Moscow.

Mitra, Ashok (1980): *The Share of Wages in National Income*, Oxford University Press, Calcutta.

Nayyar, Rohini (1991): *Rural Poverty in India: An Analysis of Inter-State Differences*, Oxford University Press, Bombay.

Patnaik, Utsa (1975): 'Contribution to the Output and Marketable Surplus of Agricultural Products by Cultivating Groups in India, 1960-61' in *Economic and Political Weekly*, vol. X, no. 52, Review of Agriculture, Dec. 27.

———— (1983): 'Classical theories of Rent and its Application to India: Some Preliminary Propositions with Some Thoughts on Sharecropping' in T. J. Byres (ed.) *Sharecropping and Sharecroppers*, Special Number of *Journal of Peasant Studies*, vol. 10, no. 2 and 3.

———— (1987): *Peasant Class Differentiation: A Study in Method with Reference to Haryana*, Oxford University Press.

———— (1997): 'Tenancy and Accumulation' in Kashik Basu (ed.) *Agrarian Questions*, Oxford University Press, Delhi.

———— (1998): 'Alternative Strategies of Agrarian Change in Relation to Resources for Development in India and China' in Deepak Nayyar (ed.) *Economics as Ideology and Experience: Essays in Honour of Ashok Mitra*, Frank Cass, London.

Pearson, Harry W. (1957): 'The Economy Has No Surplus: Critique of a Theory of Development' in Karl Polanyi, Connard M. Arensberg and Harry W. Pearson (eds.) *Trade and Markets in the Early Empires: Economies in History and Theory*, The Free Press, New York.

Preobrazhensky, E. (1965): *The New Economics*, Clarendon Press, Oxford.

Raj, K. N. (1990): *Organisational Issues in Indian Agriculture*, Oxford University Press, Delhi.

Reserve Bank of India, *All India Debt and Investment Survey*, various publications.

———— *Report on Currency and Finance*, various issues.

Ricardo, David (1971): *On the Principles of Political Economy and Taxation*, edited by R. M. Hartwell, Penguin Books.

Scumpeter, Joseph A. (1954): *Economic Doctrine and Method: A Historical Sketch*, translated by R. Aris, George Allen & Unwin Ltd., London.

Sen, Abhijit and Utsa Patnaik (1997): *Poverty in India*, mimeo, Centre for Economic Studies and Planning, Jawaharlal Nehru University, New Delhi.

Smith, Adam (1937): *An Inquiry into the Nature and Causes of the Wealth of Nations*, edited by Edwin Cannon, The Modern Library, New York.

Sweezy, Paul M. (1991): *The Theory of Capitalist Development*, K. P. Bagchi & Sons, Calcutta.