Contents

INDIAN ECONOMY

Post Independence Growth

Agricultural Development in India since Independence:

Agriculture plays an essential role in the process of economic development of less developed countries like India. Besides providing food to nation, agriculture releases labour, provides saving, contributes to market of industrial goods and earns foreign exchange. Agricultural development is an integral part of overall economic development. In India, agriculture was the main source of national income and occupation at the time of Independence. Agriculture and allied activities contributed nearly 50 percent to India's national income. Around 72 percent of total working population was engaged in agriculture. These confirm that Indian economy was a backward and agricultural based economy at the time of Independence. After 61 year

of Independence, the share of agriculture in total national income declined from 50 percent in 1950 to 18 percent in 2007-08. But even today more than 60 percent of workforce is engaged in agriculture. In spite of this, it is also an important feature of agriculture that is to be noted that growth of other sectors and overall economy depends on the performance of agriculture to a considerable extent. Because of these reasons agriculture continues to be the dominant sector in Indian Economy.

Since independence India has made much progress in agriculture. Indian agriculture, which grew at the rate of about 1 percent per annum during the fifty years before Independence, has grown at the rate of about 2.6 percent per annum in the post-Independence era. Expansion of area was the main source of growth in the period of fifties and sixties after that the contribution of increased land area under agricultural production has declined over time and increase in productivity became the main source of growth in agricultural production. Another important facet of progress in agriculture is its success in eradicating of its dependence on imported foodgrains. Indian agriculture has progressed not only in output and yield terms but the structural changes have also contributed. All these developments in Indian agriculture are contributed by a series of steps initiated by Indian Government. Land reforms, inauguration of Agricultural Price Commission with objective to ensure remunerative prices to producers, new agricultural strategy, investment in research and extension services, provision of credit facilities, and improving rural infrastructure are some of these steps.

New Agricultural Strategy**:**
In order to achieve the goal of self sufficiency in agriculture, new agricultural strategy has been initiated in 1966-67. The fundamental of this strategy is the application of science and technology for increasing yield per hectare. This strategy, known as New Agricultural Strategy or Green Revolution, is based on the extension of high yielding varieties responsive to heavy doses of fertilizers and the package of improved practices in selected areas with assured rainfall or irrigation facilities. The programmes included under the new strategy are:

(1) The high yielding varieties programme,
(2) Multiple cropping programme,
(3) Integrated development of dry areas,
(4) Plant protection measures,
(5) Increased use of fertilizers, and
(6) New irrigation concept.

Notwithstanding these progresses, the situation of agriculture turned adverse during post-WTO period and this covered all the sub sectors of agriculture. The growth rates in output of all crops decelerated from 2.93 percent to 1.57 percent. The livestock

declined from 4.21 percent to 3.40 percent. The fisheries declined from 7.48 percent to 3.25 percent. Only, forestry witnessed a sharp increase from 0.09 percent to 1.82 percent.

The crop sector, which forms largest segment of agriculture, showed poorest growth during post-WTO period in comparison to all other periods. Further, within crop sector, all crops except sugar showed declining trend between initial years of reforms and post-WTO period. This deceleration is very high in Cereals, Corse Cereals, Pulses, Oilseeds, and Drugs & Narcotics. The growth rate turned negative in the case of pulses.

Both dominant nature of agriculture and decelerating growth trend in agriculture attracts attention of policymakers, researchers and economists. The main cause of failure of all development policy for agriculture is that there is no availability of any separate development strategy for Indian agriculture. This is due to the fact that we had not available necessary data to study the characteristics of Indian agriculture. But presently we have come a long way from Independence and now we have long-terms data pertaining to Indian agriculture.

Agricultural Policy: A Review

For the overall development of Indian agriculture, many institutional and infrastructural changes have been introduced since Independence. Broadly, agricultural policy followed during this period can be distinguished in four phases: first phase considered from 1947 to mid sixties, second phase considered period from mid-sixties to 1980, third phase included period from 1980 to 1991, and forth phase includes period from 1991/92 onwards.

The first phase of agricultural policy witnessed tremendous agrarian reforms, institutional changes, development of major irrigation project and strengthens of cooperative credit institution. The most important contribution of land reforms was abolition of intermediaries and giving land titles to the actual cultivators. This released productive forces and the owner cultivators put in their best to augment production on their holdings. Land reforms were important in increasing agricultural production during this phase. The Community Development Programme, decentralised planning and the Intensive Area Development Programmes were also initiated for regenerating Indian agriculture that had stagnated during the British period. In order to encourage the farmers to adopt better technology, incentive price policy was adopted in 1964 and the Agricultural Price Commission was set up to advice the Government on the fixation of support prices of agricultural crops. Despite the institutional changes and development programmes introduced by the Government during this phase, India remained dependent upon foreign countries for food to feed the rising population.

The second phase in Indian agriculture started in mid 1960s with adoption of new agricultural strategy. The new agricultural strategy relies on high-yielding varieties of crops, multiple cropping, the package approach, modern farm practices and spread of irrigation facilities. The biggest achievement of this strategy has been attainment of self sufficiency in foodgrains. Agrarian reforms during this period took back seat while research, extension, input supply, credit, marketing, price support and spread of technology were the prime concern of policy makers.

The next phase in Indian agriculture began in early 1980s. This period started witnessing process of diversification which resulted into fast growth in non-foodgrains output like milk, fishery, poultry, vegetables, fruits etc which accelerated growth in agricultural GDP during the 1980s. There has been a considerable increase in subsidies and support to agriculture sector during this period while public sector spending in agriculture for infrastructure development started showing decline in real term but investment by farmers kept on moving on a rising trend.

The fourth phase of agricultural policy started after initiation of economic reform process in 1991. Economic reforms process involved deregulation, reduced government participation in economic activities, and liberalization. Although there is no any direct reforms for agriculture but the sector was affected indirectly by devaluation of exchange rate, liberalization of external trade and disprotection to industry. During this period opening up of domestic market due to new international trade accord and WTO was another change that affected agriculture. This raised new challenges among policymakers. Because of this, a New Agricultural Policy was launched by Indian Government in July 2000. This aims to attain output growth rate of 4 percent per annum in agriculture sector based on efficient use of resources. It seeks to achieve this objective in a sustainable manner and with equity. This was first time when government released a national agriculture policy. The policy document discusses what ought to be done in agriculture but the subsequent step, how and when policy goals and objective would be achieved is not discussed. Therefore, it is highly desirable to prepare action plans at both centre and state level in quantity terms to implement the new policy agenda in a time bound framework.

Changing Agrarian Economy since Independence

Land Use Pattern

The basic factor in agriculture is land. A knowledge about land use pattern is vital to understand whether the utilisation of land in India is at its full potential or far from its full potential. In India the classification of land has had its roots in agricultural statistics. Till 1950, the land in India was broadly classified into five categories:
(i) Area under forests;
(ii) Area not available for cultivation;

(iii) Uncultivated lands including current fallows;
(iv) Area under current fallows; and
(v) Net area sown.

But then it was realised that such a classification did not give a clear picture of the actual area under different categories of land use required for agricultural planning. Hence, a reclassification was adopted from March 1950. Under it, land in India now classified under nine different categories. These are as:

(i) forests;
(ii) barren and uncultivable lands;
(iii) land put to non-agricultural uses;
(iv) cultivable wastes;
(v) permanent pastures and other grazing lands;
(vi) miscellaneous tree crops and groves not included in the net area sown;
(vii) current fallows;
(viii) other fallows; and
(ix) net sown area.

- The total geographical area of the country is 328726 thousand hectares in which 93 percent area is reporting area which means that the area for which record is available. It was 88 percent in 1950/51.
- The net sown area has risen by 18.44 percent from 1950/51 to 2000/01. The net sown area is only 46 percent of total reporting area that was 41 percent of total reporting area in 1950/51.
- The area under non agricultural use has increased from 12690 thousand hectares to 24070 thousand hectares since 1950/51.
- But barren and uncultivable land has fallen from 37484 thousand hectares to 17709 thousand hectares.
- Both the cultivable waste land and fallow land have also decreased during this period. But even today 4.4 percent of total reporting area is available as a cultivable waste land and 4.8 percent of total reporting area is fallow land. This indicates that there is scope to increase the net sown area by at least 5 to 10 percent by improving both cultivable waste land and fallow. Gross sown area was 131893 thousand hectares in 1950/51 and it has increased to 185704 thousand hectares in 2001/02.
- This shows that only 11 percent of net sown area was used for more than one crop in 1950/51 and this figure increased to 31 percent in 2001/02. This point out that gross sown area can be increased by 70 percent of net sown area through intensive cropping.

Changing Agricultural Structure

We look at changing structure of Indian agriculture in terms of employment and land holding. The share of agriculture in employment declined from about 82 percent in 1950/51 to about 72 percent by 2001. During the same duration, the share of agriculture in total GDP also declined from 54.66 percent in 1950/51 to 24 percent by 2001. Among agricultural workforce about 45.6 percent are registered as agricultural labour and the rest, i.e., 54.4 percent as cultivators while 28.1 percent was registered as agriculture labour and the rest as cultivators in 1950/51. This indicates that agricultural workforce shifted from cultivators to agricultural labours.

The number of marginal and small holdings and the area under such holdings has increased while the number of semi-medium, medium, and large holdings and the area under such holdings has reduced. It reveals that the inequalities in the distribution of land among the cultivators has reducing trend but the number of uneconomic holdings has an increasing trend, i.e., small and marginal holdings are increasing in both number and percentage.

Changes in Cropping Pattern

Cropping pattern means the proportion of area under different crops at a particular period of time. A change in cropping pattern means a change in the proportion under different crops. The area under non-food crops as a proportion of the total cropped area is increasing but still there is dominance of food crops. At the beginning of the economic planning in India, 76.7 percent land was put under food crops and about 23.3 percent on non-food crops. By 2001, area under food crops had come down to 65.83 percent and under non-food crops has increased to 34.17 percent. This shift in the allocation of area from food crops to non-food crops reflect a change from subsistence cropping to commercial cropping. This shifting of land from food crops to non-food crops was mainly influenced by the prevailing price in market and profitability per hectare.

Similarly, here it can also be concluded that, there is preponderance of cereals, about 54.43 percent of the area is devoted to the production of cereals, while only 11.4 percent is devoted to pulses. Though, the area under both cereals and pulses is increasing but the rate of increase in area under cereals is greater than that of pulses. It means whatever cropped area increased as a result of irrigation facilities, chemical fertiliser, and high yielding varieties of seeds, a greater part of it is devoted to foodgrains. Within cereals, area under coarse cereals is gradually declining since 1950/51. This is due to fact that coarse cereals are inferior goods.

Performance of Indian Agriculture
Output Growth

Agricultural growth is one of the main facets of India's economic development and national food sufficiency policies. The aggregate agricultural output increased annually at 2.6 percent during period from 1950/51-2006/07.

Disaggregating of aggregate agricultural output growth into sub periods shows that annual growth rate of agriculture was the highest during the period 1981/82-1990/91 and the lowest during period 1950/51-1965/66. Further disaggregating of agriculture into sub sectors; crop, livestock, forestry, and fishing, shows that fisheries and livestock were the main sources of the acceleration in growth rate of agricultural output in 1980s. The growth rate of aggregate agricultural output turned up 3.29 percent during the initial years of reforms, which was 0.43 percentage point higher than the previous period. However, the situation of agriculture turned adverse during post- WTO period and this covered all the sub sectors of agriculture. The growth rates in output of all crops decelerated from 2.93 percent to 1.57 percent. The livestock declined from 4.21 percent to 3.40 percent. The fisheries declined from 7.48 percent to 3.25 percent. Only, forestry witnessed a sharp increase from 0.09 percent to 1.82 percent.

The crop sector, which forms the largest segment of agriculture, grew annually at 2.5 percent since 1950/51. The acceleration rate of crop sectors fluctuated around 2.5 percent during all sub periods. It grew at the lowest rate during post-WTO period in comparison to all other periods. Further, within crop sector, all crops except sugar, condiment, spices, fruits and vegetables showed declining trend between 1950/51-1965/66 and 1991/92- 2006/07. This deceleration is very high in Cereals, Corse Cereals, Pulses, Oilseeds, and Drugs & Narcotics. Similar declining trend in growth rate of all crops is also confirmed by Table 9 that shows average annual compound growth rate of output in physical term for all major crops.

These growth rates are lower than the growth rate of rural population. Thus, the clear implication of this growth trends is that the per capita output in agriculture is declining. This seems to be one of the causes for rising disparity between rural and urban areas in India.

Net Availability of Foodgrains

An average availability of foodgrains per capita per day was 429.8 gram in 1950s and increased to 475.5 gram during 1990s. Further, it decreased to 446.6 gram in the first decade of 21st century. Within foodgrains, all food crops reveals similar trend except coarse cereals. The availability of coarse cereals is continuously declining.

Input Use Pattern

Agricultural production and efficiency largely depend upon the inputs applied and the methods adopted. In India, "while population grows, the land surface is fixed and of

this only a certain proportion is available for cultivation". Further scope for bringing extra land under the plough is limited. If more production is to be got out of this existing area, the problem has to be tackled on a wide front. This can be done by applying inputs in a more intensive way and by adopting modern methods of production through use of improved technology, besides making an adequate provision for institutional financing, better methods of marketing, etc.

Technical factors, i.e., technology have received increasing emphasis and the recent breakthrough in agriculture is the outcome of these factors. These technological factors comprise

(i) irrigation;
(ii) Consumption of fertilisers and manure;
(iii) Improved seed, and
(iv) agricultural implements.

Water is another basic factor in agriculture next only to land. Only rainfall is the natural source of water in agriculture. But rainfall is the most unreliable and is marked by wide variations in different parts and also variation from year to year in its quantity, incidence, and duration. Therefore, only artificial supply of water through irrigation is the way to overcome the problem of deficiency of water. Irrigation water comes from two sources: surface water and ground water. Surface water is provided by the flowing water of rivers or the still water of tanks, ponds, lakes, and artificial reservoirs. The surface water is carried to the filed by canals, distributaries, and channels. Ground water is tapped by sinking wells where drought animals, diesel or electric power is utilized to take out water. In india canals, tanks, wells including tubewells are the principal sources of irrigation. Since 1950-51, considerable importance had been attached to the provision of canal irrigation and well irrigation. Even though 40 percent of irrigation is supplied by canals, now well irrigation has caught up rapidly irrigation by tubwells has been expanded considerably. In the meantime, tanks and other source of irrigation are declining in importance).

In any scheme for boosting agricultural output, the use of chemical fertiliser has an important role. India's soil though varied and rich is deficient in nitrogen and phosphorus - two plants nutrients which together with organic manure influence crop return, with population rising at a fast rate, the use of larger and larger doses of chemical fertiliser is the only way to augment our foodgrains production. The new agricultural strategy was based on increased use of fertiliser.

Since adoption of the new agricultural strategy in the sixties, the consumption of chemical fertiliser has been growing rapidly. The Government is also encouraging the use of fertiliser through heavy subsidies. That is why the consumption has gone up

abnormally high from 70000 tonnes in 1950-51 to 2,177,000 tonnes in 1970-71, 12,546,000 tonnes in 1990-91 and 19,145,000 tonnes in 1999-2000. The fertiliser consumption per hectare of gross cropped area has also gone up steadily, from 0.50 kg in 1950-51 to 74 kg in 1995-96. The corresponding figures for developed countries are much higher than the Indian Agriculture.

The low consumption may be due to the poor economic condition of farmers, lack of assured irrigation (58.5 % of the cropped area lack irrigation facilities), inadequate demonstration and promotion for the use of fertilisers, insufficient supply at the proper time, high price of fertiliser, absence of soil testing facilities so as to recommended the precise deficiencies in the soil and recommended proper dose of fertiliser, and wrong notion among some conservative farmers regarding the use of chemical fertilisers.

Improved seeds have played vital role in augmenting agricultural production in developing countries like India. These seeds not only help in increasing in agricultural production by 10 to 20 percent but introducing new characteristics in the biological structure of the plant. For, example researches have made it possible to develop such seeds which are quick maturing, provide higher agricultural yield and are resistant to insects, diseases and droughts. In India the success of Green Revolution is partly associated with the use of high yield variety (HYV) seeds. The HYV programme was started in 1966. Between 1967-68 and 1996-97 the area under HYVP has witnessed 12.6 times increase (from 6.07 million ha to 76 million ha). The success of the programme remains most marked in the case of wheat and rice. The HYV programme has led to 4.84 times increase in the output of wheat from 1966-67 (11.39 million tonnes) to 1990-91 (51.1 million tonnes) and 1.78 times increase in the production of rice from 1967-68 (37.6 million tonnes) to 1990-91 (74.3 million tonnes).

The implements and tools used by the Indian farmers are primitive, crude, and obsolete which impede the development of modern agriculture. New farm machineries not only save time, reduce cost of production but also increase agricultural production. These machineries replace the animal and human power and perform various works of agriculture ranging from ploughing, showing, and harvesting to the marketing of the produce. There is difference of opinion amongst scholar regarding the mechanisation of agriculture. In fact small and scatter land holding, cheap and abundant human labour and poverty amongst farmers go against total mechanisation of Indian agriculture but the possibility of limited mechanisation is not ruled out. In many cases where the use of animal and human power has become costlier, mechanization is proving to be boon for agriculture. Even small farmers prefer to use these machineries to save the time and money.

Studies show that sufficient progress has been made in respect of farm mechanisation in India. For example, the number of tractors which was less than 10000 in 1950-51

increased to 1 lakh in 1970-71 and 14.5 lakhs in 1990-91. Similarly, the number of diesel pump sets increased from 80,000 in 1950-51 to 48.5 lakhs in 1990-91 and electric irrigation pump sets from 26,000 in 1950-51 to 91 lakhs in 1990-91. But most of the mechanisation has largely been confirmed to the rich farmers belonging to the developed areas of the country.

Sources of Growth in Indian Agriculture

Any change in the output of a crop in physical term depends fundamentally on the changes in the area under the crop and its average yield.

During 1950/51-1965/66, area and yield both almost equally contributed in growth of rice, wheat, and coarse cereals. But for non-food crops, expansion area was dominant source of output growth.

During 1965/66-1980/81, increase in yield was comparatively more contributed in output growth of all major crops except Wheat and Jute and Mesta. For Wheat, 40.49 percent of output growth was contributed by expansion in area and 34.46 percent was contributed by increase in yield. Remaining part (25 percent) of output growth of Wheat was contributed by interaction of area and yield.

During 1981/82-1990/91, an increase in yield was more contributed in output growth of all major crops except oilseeds and sugarcane.

During 1991/92-2005/06, again yield's contribution in output growth of all major crops except Wheat, Sugarcane, and Potato was greater than expansion in area. It is a matter of great concern as to why the productivity of wheat and sugarcane remains stagnant.

Instability in Indian Agriculture

Instability is one of the important decision parameters in development dynamics and more so in the context of agricultural production. An analysis of fluctuations in crop output, apart from growth, is of importance for understanding the nature of food security and income stability. Wide fluctuations in crop output not only affect prices and bring about sharp fluctuation in them but also results in wide variations in disposable income of the farmers. The magnitude of fluctuations depends on the nature of crop production technology, its sensitivity to weather, economic environment, availability of material inputs and many other factors. High growth in production accompanied by low level of instability for any crop is desired for sustainable development of agriculture.

The instability in area, production and yield of major crops is measured in relative terms by the Cuddy-Della Valle index which is used in recent years by a number of researchers as a measure of variability in time series data. The simple coefficient of

variation overestimates the level of instability in time-series data characterized by long term trends whereas the Cuddy-Della Valle index corrects the coefficient of variation.

Overall analysis indicates that production and yield instability for almost crops declined in post-reform period. But further it also indicates that area instability increased in the same period. Therefore, it can be concluded that reduction in production instability is mainly due to reduction in instability of yield and present instability in production is mainly because of increasing instability in area.

Determinates of Agricultural Production

Most previous studies on Indian agriculture used gross value of agricultural output (GVAO) as the total value of agricultural production. GVAO is defined as the sum of the total value of production from farming, forestry, livestock, and fishery. The sum of output of all products of farming, livestock, forestry, and fishery equals to GVAO and is expressed at constant (1999/2000) prices. The data on GVAO were taken from the National Account Statistics (Back series 1950 to 2000, and 2008) published from Central Statistical Organization, Government of India.

Labour, land, and capital are considered the three main inputs in agricultural production. Labour input is measured as workforce involved in agriculture. The data of workforce in agriculture is given in Agricultural Statistics at a Glance (2008) published from Directorate of Economics and Statistics, Ministry of Agriculture, Government of India only for census year. This series was interpolated for making time series data. Land input refers to the net cultivated area and is measured by net sown area. The data were taken from Agricultural Statistics at a Glance (2008). Capital stock of a country is broadly referred to as that part of national wealth which is reproducible; it consists of all resources which contribute to the production of goods and services. Capital is measured in terms of net fixed capital stock in agriculture and data related to net fixed capital stock are taken from Nation Account Statistics. This capital stock measure includes agricultural machinery, farm equipment and tools, transport equipment in farm business, land improvements, investments in private and public irrigation, and farm houses.

Conclusion

There is scope to increase both net sown area and gross sown area. Only 39 percent of net sown area is irrigated area. After evaluating the changes in agrarian structure, input use pattern and growth trend of agriculture, this paper point outs some points. These are: agricultural workforce shifted from cultivators to agricultural labours, the number of uneconomic holdings has an increasing trend, area under food crops shifted towards non food crops, and within food crops area under cereals has been shifting towards non cereals, growth trend of aggregate agriculture as well as all sub

sector of agriculture except forestry is showing declining trend during post-WTO period. It is also observed in this study that production and yield instability declined for almost crop during post reform period while, area instability increased in the same period. This further indicates that instability in area became major responsible factor for production instability.

The decomposition analysis indicates that rising output per hectare is the predominant source of agricultural growth for most of the crops and crop groups. Disaggregating of reference period in four sub periods shows that expansion of agricultural land was the main source of agricultural growth during the period before 1965/66 after that the contribution of increased land area under agricultural production has declined over time and increase in productivity became the main source of growth in agricultural production.

The estimation of aggregate agricultural production function with both intercept and slope dummy indicates that land significantly affected the agricultural output growth during 1950/51-1964/65 and after that land became less significant and now labour and capital are significantly affecting the agricultural output growth. Thus, the result of the aggregate agricultural production function verifies the results of decomposition analysis.

Industrial Growth in India

Pre Independence Industrial Growth

Indian Economy during the British rule exhibited most of the fundamental characteristics of an underdeveloped economy in a distinct manner. The Indian industries were in the stage of infancy and the rate of their growth and expansion was very low and slow during the British period. Even before the British rule the picture was not very much shining and prosperous from industrialization point of view. India basically has been and is an agricultural country yet it had certain well established industries before the British rule. It is also a historical fact that prior to the 19th century India had been a great manufacturing country as quoted by the industrial commission 1916 "At a time when the west of Europe the birth place of the modern industrial system was inhabited by uncivilized tribes, India was famous for the wealth of her rulers and for high artistic skill of her craftsmen. Even at a much later period when the merchant adventures from the west made their first appearance in India the industrial development of his country was at any rate not inferior to that of the most advanced European nations."

Whether it was the northern India or the southern both of them were known for industrial production such as spinning and weaving. A variety of industrial products were manufactured in India - some of them were well-known such as leather and