Sustainability Through Total Factor Productivity Growth in Agriculture Incorporating Institutional Factors:
A Post-Globalized Indian Scenario

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ABSTRACT

With the increasing population pressure and food insecurity problem in India, and the problem of unsustainable social and economic systems, it was inevitable to shift away the focus of agricultural activities from the traditional system to the modern one. Having followed a series of agricultural policies in India, the role of irrigation and institutional credits cannot be denied upon the growth of output in the sector. There are some studies on the total factor productivity growth (TFPG) in Indian agriculture, but a few studies cover the role of irrigation and bank credit upon agriculture output. The present study computes TFPG out of the institutional roles through public irrigation facilities and commercial bank credit besides traditional inputs in Indian agricultural sector for the post globalized era of 1991-2019. Using the growth accounting approach, the study finds that the institutional factors such as public irrigation facilities and bank finances have contributed significantly to the growth of the agricultural output in India as the values of TFPG have increased over time.

KEYWORDS

agriculture sector, credit, growth, India, irrigation, TFPG, output, sustainability

INTRODUCTION

Agricultural sector in India has experienced major policy shifts from the traditional cultivation practices to modern cultivation practices in respect of all the crops and allied activities. During the early phase of independence, the traditional cultivation practice was not able to feed up the large population size of the country making a major part food insecured. At that time, agriculture sector was dependent upon the vagaries of nature and the facilities of multi-purpose seeds were not available. Mostly the procured seeds by the farmers could not support in growing productivity in the sector. It was thus the scenario that compelled the then Government at the Centre and the associated policy makers, scientists, among the others, to think for drastic policy measures to solve the food insecurity problem

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through making the farming practices less nature dependent as well as one time seed options. It was thus the revolution that happened in the mid 1960's in the name of green revolution made it possible to increase total agricultural production as well as productivity of land through modern agricultural practices where high yielding varieties (HYV) seeds were used, irrigation facilities patronized by the government's initiatives were started, fertilisers, insecticides and pesticides were used, etc. But the productivity could not be increased to the certain height to cater rising population pressure. It was thus necessary to make reforms in the land holdings. The land reform program was started in the early seventies, plots were fragmented to make the intensive use of labour forces, tenancy acts were amended, among others, which further led to increase in the productivity and aggregate quantity of production as a whole. There was a huge revolution in the agriculture sector in India.

But, to have multiple cropping in a given year and to facilitate purchasing capacity of different modern agricultural inputs in the short run as well as long runs there were scarcity of funding. The commercial banks were nationalized in 1969 and 1980 to provide credits to agriculture and allied sectors as priority basis so that the dependence of the farmers upon the village money lenders would be minimised and surplus in the production process could be maximized. In the post liberalized phase, there has been further growth in the sector supported by importing advanced capital goods, foreign capital inflow through foreign direct investment (FDI) channels and opening of new export channels have made the sector to prosper more. The role of different institutional supports through public institutional interventions in the huge growth performance of the sector cannot thus be ignored. As per the data of the Central Statistical Organization (CSO) and the Reserve Bank of India (RBI) the total GDP accountable to the agriculture sector in 1950-51 was around Rs. 5118 crore which reached Rs. 131108 crore in 1991-92 and jumped to Rs. 3087623 crore in 2019-20. The increase was about 24.6 times in the pre-reform phase of forty years and 22.5 times growth in the post-reform phase of thirty years. It is thus evident that the traditional means of agricultural practices could not be able to generate such gigantic growth rates of the agriculture sector in the country; major policy shifts through institutional interventions was the key to the success.

It is now a pertinent issue to discuss how much of the huge growth of the sector is achieved due to the growth in the total factor productivity (TFPG). There has been some good number of studies in this regard available in the literature. The notables among them are Dholakia and Dholakia (1993), Desai and Namboodiri (1997), Mahadevan (2003), Sivasubramonian (2004), Das (2016). The studies analyzed the contribution of the TFPG upon the growth of the agriculture sector in India for the period covering the post-independence phase to a little extent of post liberalization phase. The TFP growth in agriculture results predominantly from public investment in infrastructure facilities like irrigation, electricity, roads, etc. and in agricultural research and extension, education, and human resource development during the pre-liberalization phase. Further the studies show relatively low TFPG in the early phase of liberalization. On the other hand, Desai (2016) estimated TFPG in Indian agriculture and allied sectors for different types of lands for 1981-2008, covering a wider part of the reform phase, and has shown that TFPG for this period ranged between 1% during 1981-1990 to about 1.7% during 2000-2008 which means TFPG was higher during the post reform period than during the pre-reform period. But the studies did not cover contributions of the traditional inputs, land, labour and physical capital, with the institutional factors such as public funded irrigation projects and commercial bank credits for the long arena of post liberalization. As the policy of liberalization allowed the agricultural sector to prosper by means of export opportunities, greater foreign capital inflow, easing industrial protection leading to more agriculture-industry linkages, among others, it is thus required to estimate the contribution of TFPG in the Indian agriculture during the post liberalization phase accommodating wider institutional factors. The present study attempts to take up this exercise.

Review of Existing Studies

In order to find the gaps in the literature and to frame its own objectives the study tries to make a systematic literature review in line with some of the special articles on review works in different