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Fueling agricultural growth in India: Some reflections

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ABSTRACT

Indian agriculture is experiencing under-performance despite increased attention given to it in the recent past. This paper analyzes the disparities in agricultural growth across Indian states and explores the determinants of agricultural growth, using Panel Corrected Standard Error approach. Analysis using beta convergence shows that the disparities across the state's agricultural growth are narrowing down for the period 1980–1981 to 2011–2012. However, to stimulate growth in the states where agriculture is lagging behind, a higher emphasis on increasing the area under irrigation, expenditure on agricultural research, area under fruits and vegetables, number of regulated markets, length of roads, cold storage facilities and institutional credit for investment purposes is needed. Private sector should be involved in public–private-partnership mode for improving the infrastructure in this sector.

Introduction

Growth in agricultural sector is crucial for achieving an equitable and inclusive growth in India given the fact that a sizable proportion of its rural population still lives below the poverty line (41.8% in 2004–2005) and around 53% of the population is engaged in agriculture (Government of India, 2012a,b). About 55% of the total land mass of 328.73 million hectare in the country is used for agricultural purposes (Government of India, 2013a). Presently, Indian agriculture is witnessing a sluggish growth as evident from Fig. 1. Agricultural GDP grew below the targeted growth rate since after the Eighth Five Year Plan (FYP) (1992–1997). However, the economy witnessed a robust growth in the same period, widening the gap between agriculture and non-agriculture sector. This was despite the fact that the gross capital formation in agriculture (GCFA) as percentage of the agricultural GDP improved from 8.73% in 1996–1997 to 21.2% in 2011–2012. Though, the GCFA was much lower than the total capital formation in the economy (i.e. 40% of the GDP) for the corresponding period (Government of India, 2013a). This signifies less investment in the agricultural sector as compared to the non-agricultural sector. The situation is grim, as national representative survey conducted by the National Sample Survey Organisation in 2003 revealed that 27% of the farmers did not consider farming as a profitable business, and given the opportunity 40% of the farmers were open to taking up other career options (NSSO, 2005). Therefore, there is a need to give an impetus to agriculture for fueling the growth and for opening many more avenues to make this sector more profitable.

Land is a very important and limiting input in agriculture. Its quality and size play a critical role in improving the efficiency and growth of agricultural production. With 55% of net sown area being rainfed, agricultural production in India heavily depends on the distribution of monsoon rains. In addition, farms are getting fragmented and the average size of holdings has declined from 1.69 ha in 1985–1986 to 1.16 ha in 2010–2011 (Government of India, 2013b). About 84% of holdings are less than 2 ha and approximately 67% farmers operate on less than 1 ha (Government of India, 2013b). These fundamental constraints have to be kept in mind while selecting the options for fueling the growth in agriculture.

There is a consensus among researchers and policy makers that diversification of agricultural production by allocating land in favour of high value agriculture (HVA) has the potential to accelerate agricultural growth (Raju and Pandey, 2008; Rao et al., 2006). HVA especially milk, fruits and vegetables are labour intensive and they generally do not require large parcels of land. Therefore, small and marginal land owners, with surplus labour, can take advantage of it. The returns per unit of land from HVA are about 5 times more than that from the food grains (Dev and Pandey, 2013). Such a diversification has shown to generate employment opportunities through rural labour markets

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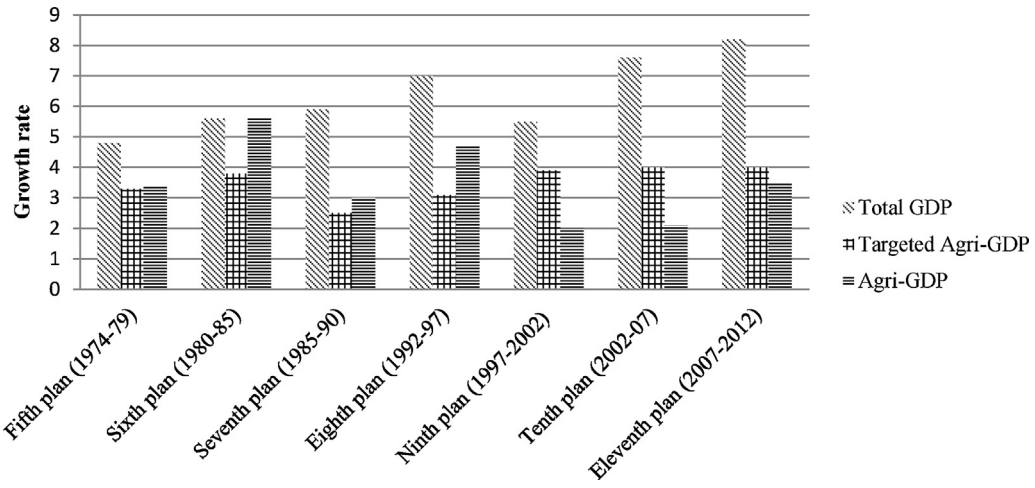

Fig. 1. Targeted and achieved growth rate in agriculture sector.

Source: Government of India (GoI) (2013b).

Table 1
Share of different food items in total food expenditure.

Food items	Rural		Urban	
	1987–1988	2009–2010	1987–1988	2009–2010
Cereals	41.1	29.1	26.6	22.4
Pulses	6.3	6.9	6.0	6.6
Milk	13.4	16.0	16.8	19.2
Egg, fish & meat	5.2	6.5	6.4	6.6
Fruits & vegetables	8.1	11.6	9.4	10.6
Sugar	4.5	4.5	4.3	3.7
Food total	100	100	100	100

Source: GoI (2012b).

(Joshi et al., 2004; Barghouti et al., 2004). Over the period, the consumption pattern and food basket are also changing in favour of HVA as shown in Table 1 due to increasing income, rapid urbanization and trade liberalization (Kumar et al., 2007; Joshi et al., 2007). This pattern can also be explained by Bennett's Law, which states that 'as income increases, the proportion of starchy staples in the food basket declines relative to the share of more expensive sources of calories'. Therefore, an opportunity does exist in the form of diversification for stimulating the growth in agricultural sector.

Agriculture is a state subject in India, and hence agricultural growth is not only influenced by resource endowments and agro-ecological factors but also by the policies implemented by the state governments. A wide gap in the agricultural growth performance across the states is evident from Table 2. Therefore, it is imperative to know whether these disparities in agricultural growth rates across the states have reduced or widened over time.

Table 2
State agriculture GDP growth.

	2000/2001–2010/2011
Andhra Pradesh	4.98
Bihar	3.29
Gujarat	5.42
Haryana	2.89
Himachal Pradesh	2.62
Karnataka	3.74
Kerala	0.37
Maharashtra	4.84
Madhya Pradesh	4.26
Orissa	3.62
Punjab	1.90
Rajasthan	3.70
Tamil Nadu	3.58
Uttar Pradesh	1.81
West Bengal	1.65

Source: Central Statistical Organisation (CSO) (2013b).

In this paper, we have explored agricultural growth performance in different states using the literature on absolute beta convergence. Determinants for fuelling agricultural growth across the states to make it more profitable are investigated using panel corrected standard error method proposed by Beck and Katz (1995). The second section provides a description of the data and the methodology, the third section presents the results along with a discussion, and the conclusions are given in the last section.

Materials and methods

The present study is based on secondary data for fifteen major states covering most of the cropped area and selected on the basis of data availability. The selected states covered around 95% of the total cropped area and 86% of the agricultural GDP in 2011–2012. States included are Andhra Pradesh, Bihar (including Jharkand), Gujarat, Haryana, Himachal Pradesh, Karnataka, Kerala, Madhya Pradesh (inclusive of Chhattisgarh), Maharashtra, Orissa, Punjab, Rajasthan, Tamil Nadu, Uttar Pradesh (including Uttarakand) and West Bengal. The data on the net and gross state agriculture domestic product at 2004–2005 prices for these states were extracted from National Accounts Statistics 2013 and back volumes (CSO, 2013a,b), while the data on the gross cropped area were obtained from various issues of CMIE reports. The data on other variables were obtained from various sources such as Ministry of Agriculture, Planning Commission, India Stat database, National Horticulture Board reports, and National Accounts Statistics.

The methodology used for convergence analysis and determining the factors of agricultural growth in India are described in the following two subsections.

Absolute beta convergence

To understand the inter-state disparities in agricultural performance over the time, methodology of absolute beta convergence was used. According to the neo-classical growth models suggested by Solow (1956), countries with lower per capita income should have higher growth rate compared to countries with higher per capita income. This phenomenon is driven by diminishing marginal returns to capital accumulation allowing the poorer countries to catch up with the richer countries over time. We envisage the same phenomenon for the agricultural growth in different states of India.