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Editor
Prof. Ravindra K Brahme
General Secretary
Indian Economic Association
Professor and Head
School of Studies in Economics
Pt. Ravishankar Shukla University
Raipur, Chhattisgarh.
ravibrahme@gmail.com
Mobile : + 91 - 98271 10259

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Development of Agricultural Sector and Situation of the Transformation Rural Areas in India

Tom Mathews*
M. Muruganathan**

Abstract

India is predominantly a rural country with two third population and 70% workforce residing in rural areas. Rural economy constitutes 46 per cent of national income. Despite the rise of urbanisation more than half of India's population is projected to be rural by 2050. Thus growth and development of rural economy and population are a key to overall growth and inclusive development of the country. Traditionally, agriculture is the prime sector of rural economy and rural employment. The transition in composition of output and occupation from agriculture to more productive non-farm sectors is considered as an important source of economic growth and transformation in rural and total economy. However, no serious attempt has been made to analyse and understand the transition in India's rural economy. Economic studies on rural India have focused mainly on changes in rural employment, by gender and at broad sectoral aggregation between agriculture and non-agriculture. The present study examines long term changes in (i) sectoral composition of rural output and employment, (ii) their relationships and implications for output growth and employment and (iii) income inequalities across sectors and between rural and urban sectors. The findings of the study are used to suggest strategy for future development of India's rural economy. The study highlights the profound changes experienced by India's rural economy which have not been reckoned. Contrary to the common perception about predominance of agriculture in rural economy, about two third of rural income is now generated in non agricultural activities. Similarly, it looks amazing to find that more than half of the value added in manufacturing sector in India is contributed by rural areas. However, the impressive growth of non agricultural sector in rural India has not brought significant employment gains or reduction in disparity in worker productivity. This underlines the need for a new approach to direct the transition of rural economy.

Key words: Impact of Agriculture on Rural development in India: Implications for Employment and Growth

Introduction:

Accelerating economic growth, transition from an agrarian economy to an industrial or modern economy would depend on how well the agricultural sector enables this transition. Recognizing that the majority of workers are employed in agriculture where labour productivity is low, a faster growth of agriculture is necessary to make employment more remunerative. While no significant increase in the number of workers can be expected in Indian agriculture, greater use of underemployed and unemployed persons becomes important. Taking this into consideration, the present paper examines the employment dynamics in agriculture by looking at the trends in growth and empirically estimates the effects of determining factors by using the data from 1972-73 to 2009-10. Considering the Keynesian theoretical explanation about the change in employment which depends on expected output or change in output, the empirical estimations corroborate the view that performance of agriculture determines the capacity to generate employment in the sector where employment is positively influenced by High Yielding Varieties (HYV), terms of trade and public investment and variables like non-agricultural output and productivity have a negative relation with labour in the sector.

*Research Scholar, Department of Economics, VISTAS, Chennai

**Assistant Professor, Department of Economics, VISTAS, Chennai

It is necessary for the agricultural sectors to absorb the underemployed and unemployed persons so as to induce the technology, investment and favourable terms of trade. check unplanned migration from rural to urban areas and to improve socio economic conditions of vast majority of population in the country, there is a need to make rural economy stronger and create employment opportunities in rural economic activities.

India aim's to be a \$ 10 trillion by 2030. Achieving such an aspirational growth target calls for pulling all the economic growth levers—investment, consumption, exports, and across all the three sectors of agriculture, manufacturing and services. Hence, our focus in this paper is to study how agriculture can contribute to the \$5trillion and \$ 10 trillion economy. We will analyse what are the existing challenges in Indian agriculture, and what kind of transformations are required to meet these challenges. This paper shall focus on changes in techniques and technology, policies and institutions as the main driving force in agriculture.

Review of Literature:

The improvement in economic conditions of rural households is also essential for reducing the disparity in per capita rural and urban income which has remained persistently high. This requires significantly higher growth in rural economy as compared to urban India. Traditionally, agriculture is the prime sector of rural economy and rural employment. The transition in composition of output and occupation from agriculture to more productive nonfarm sectors is considered as an important source of economic growth and transformation in rural and total economy. Several scholars have observed that such transition is taking place in Indian economy (Aggarwal and Kumar 2012; Maurya and Vaishampayan 2012; Papola 2012) but at a very slow pace. This paper examines the nature of changes in rural economy and analyses its effect on job creation and occupation structure spanning over a period of the last four decades. An attempt is made to identify the reasons for mismatch in growth in output and employment in various non-farm activities. The findings are used to suggest pro employment rural growth strategy.

Trends in agricultural output: Performance and Issues in Agriculture Intrinsically agriculture matters as it is the primary source of livelihood for about 58 per cent of India's population. 80 percent of India's poor are rural. Agriculture provides food for the nation, so food security is important. Gross Value Added by agriculture, forestry and fishing is estimated at Rs. 1,855,632 crore, contributing 14.4 percent to India's GVA in FY18-19. Agriculture sector contributes 1 percent to the GDP of high income countries such as US, UK etc., 6 percent among the upper middle income countries like China and Brazil and 15 percent lower middle income countries such as India, Egypt, and Indonesia. Total food-grain production increased from 51.99 million tonnes in 1950-51 to a record 284.95 million tonnes in 2018-19. India is the largest producer (25% of global production), consumer (27% of world consumption) and importer (14%) of pulses in the world. Rice production has increased from 20.58 million tonnes in 1950-51 to 74.29 million tonnes in 1990-91 and 111.6 million tonnes in 2018-19. Production of wheat has increased from 6.46 million tonnes in 1950-51 to 55.14 million tonnes in 1990-91 and 102.2 million tonnes in 2018-19. Coarse cereals production increased from 16.09 million tonnes in 1950-51 to 42.9 million tonnes in 2018-19. India ranks first in milk production, accounting for 20 per cent of world production. Milk production in India has been increasing steadily over the years from 55.6 million tonnes in 1991-92 to 176.3 million tonnes in 2017-18, at an average annual growth rate of 4.5 percent. India ranks second in fruits and vegetables production in the world, after China. As per National Horticulture Database published by National Horticulture Board, during 2017-18,

India produced 97.3 million metric tonnes of fruits and 184.4 million metric tonnes of vegetables. Farmer's Income and landholding size The Situation Assessment Surveys of NSSO show that the average monthly income of agricultural households in current prices increased from Rs. 2115 in 2003

to Rs.6426 in 2012-13. The share of cultivation in total income is the highest at 46% in 2003 and 48% in 2013. The share of income from animals rose while that of wages and non-farm business declined in 2013 as compared to those of 2003. Apart from a paltry income, farmers are facing rising indebtedness, lesser financial inclusion, and absence of insurance facility. Since the first agriculture census over 45 years ago, the number of farms in India has more than doubled from 71 million in 1970-71 to 145 million in 2015-16, while the average farm size more than halved from 2.28 hectares (ha) to 1.08ha. The majority of India's farms (86%) are less than 2ha. The bulk of which are located in the poorer states such as Uttar Pradesh and Bihar.

Issues of transformation agricultural sector

Given that large section of the population still depends on agriculture, productivity per person and livelihood issues are serious concerns. Agriculture in India has achieved grain self-sufficiency but the production is highly resource intensive and cereal centric. Diversifying production of crops and designing careful price and subsidy policies can encourage the production and consumption of nutrient rich crops. Criticism of the MSP policy is that it is limited to few crops (mainly rice and wheat) and few states. Even for commodities covered, not all farmers are able to sell their produce at the MSP in other regions. Focusing mainly on rice and wheat is creating problems for diversification. The resource intensive ways of Indian agriculture has raised serious sustainability issues too. Increasing stress on water resources of the country would definitely need realignment and rethinking of policies. By the early 2000s, productivity per hectare of staple crops wheat and rice had grown steadily and total food-grain production had more than doubled.

The Green Revolution policies have, however, failed in raising farmer incomes, especially for the small and marginal cultivators. Over the last two decades, the real incomes of small and marginal farmers have fallen by as much as 30 per cent due to rapidly increasing input costs, weather related shortfalls in yields, widening price swings, and lack of access to technology, finance, and markets. This has resulted in increase of farm indebtedness, leading to over 3,00,000 farmer suicides since 1995 and farmer unrest in many areas of the country. It becomes important to make farmers' income and prosperity the central theme of agricultural planning for the future. If Indian agriculture has to contribute to the \$5 trillion economy, it should focus on raising farmer's income which relies on improvement in crop productivity, improvement in livestock productivity, resource use efficiency or savings in the cost of production, increase in the cropping intensity, diversification towards high value crop, improvement in real prices received by farmers, access to better markets, and shift from farm to non farm occupations. This paper will analyse how technology, institutional and policies can transform Indian agriculture so that this sector can contribute to the \$5 trillion economy.

Objectives of the study

1. To evaluate how can technology address farmer's income
2. To analyze how can technology address the issue of farmers getting right price for their produce
3. To examine how can technology address the issue of sustainability of agriculture

As we have discussed in the previous section that the challenges for agriculture today are increasing profitability for farmers, which requires us to emphasize on production, distribution and storage, giving farmers better access to markets and fair price and make agriculture sustainable in the long run. We will analyse below how technology can transform Indian agriculture by addressing some of these challenges. The future of agriculture lies in leveraging technology, riding on change drivers - Artificial

Intelligence, Internet of things and block-chain technology. Can these drivers change transform rural India? Currently farmers choose crops on the basis of the trends of the last season.

Technology can assist them in making right growing choices by carefully analysing demand, pricing and fluctuations in weather conditions. This will create a better balance between supply and demand. Technology enabled farming tools can be a boon for small farms. Technology based crop advisory around crop planning, pest-control, disease mitigation can be very useful. Using artificial intelligence (AI) crop pest management will help farmers in early identification of pests just by clicking the photo of the pest and using AI to detect it. This will facilitate early intervention and thus reduction of losses due to pest attack.

Apart from with this, technology can also help farmers avail crop insurance and credit that are rightly priced. This can be possible by analysing data from various sources including land records, weather analysis, historical and current satellite imagery and remote monitoring using drones. The single greatest challenge is enabling farmers to realise better prices for their produce. Most farmers face many obstacles to get right income for their production. These include the distance from markets, dependence on local moneylenders and traders for access to capital, little knowledge of price movements, the need for ready cash at harvest, the cost of transport to markets, the control of markets by trader cartels, and the lack of nearby and inexpensive storage facilities.

Digital solutions are seen as a way to overcome many obstacles. Online price discovery and marketing platforms would provide farmers transparency and unmediated market access. In the traditional model, middlemen walk away with a large chunk of a farmer's income. E-marketplaces that can connect buyers and farmers directly can dis-intermediate the chain and offer better incomes to farmers. An effective cold chain system is the need of the hour for Indian agriculture. Most of the existing cold storage units are outdated.

Technology enabled cold storage chains that are controlled using smart devices can prevent post-harvest losses. Automated grading and sorting of crops using robotics and machine vision, can also reduce efforts and wastage in the supply chain. Sharing economy models that allow shared usage of high-cost equipment like tractors can decrease financial burden on the farmers. This model can help farmers use tools and machines on a per usage basis instead of investing a high cost on outright purchase. With growing usage of smartphones, farmers can tap into the wisdom of the crowds, other knowledgeable farmers and agronomists to take inputs during the growing period. We have to find ways where technology can help support farmers to secure and grow income levels, while helping them navigate worsening climate-related risks. Of course, the right investments in technology only work when paired with infrastructure development and right policies.

Role of Agriculture in the Indian Economy

The role of the agricultural sector in the Indian Economy is:

Contribution in GDP

Since the time of Independence, the agriculture sector has been the major contributor to the country's GDP. In the financial year 1950-1951, agriculture and other related activities had a share of 59% of the country's total GDP in that financial year. Although there is a constant drop in the agriculture sector, it is still one of the most crucial sectors in the Indian Economy. On the other hand, in developed countries such as the UK and USA, the agriculture sector contributes only about 3% of the country's total GDP.

Largest Employee Sector

to Rs.6426 in 2012-13. The share of cultivation in total income is the highest at 46% in 2003 and 48% in 2013. The share of income from animals rose while that of wages and non-farm business declined in 2013 as compared to those of 2003. Apart from a paltry income, farmers are facing rising indebtedness, lesser financial inclusion, and absence of insurance facility. Since the first agriculture census over 45 years ago, the number of farms in India has more than doubled from 71 million in 1970-71 to 145 million in 2015-16, while the average farm size more than halved from 2.28 hectares (ha) to 1.08ha. The majority of India's farms (86%) are less than 2ha. The bulk of which are located in the poorer states such as Uttar Pradesh and Bihar.

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The Green Revolution policies have, however, failed in raising farmer incomes, especially for the small and marginal cultivators. Over the last two decades, the real incomes of small and marginal farmers have fallen by as much as 30 per cent due to rapidly increasing input costs, weather related shortfalls in yields, widening price swings, and lack of access to technology, finance, and markets. This has resulted in increase of farm indebtedness, leading to over 3,00,000 farmer suicides since 1995 and farmer unrest in many areas of the country. It becomes important to make farmers' income and prosperity the central theme of agricultural planning for the future. If Indian agriculture has to contribute to the \$5 trillion economy, it should focus on raising farmer's income which relies on improvement in crop productivity, improvement in livestock productivity, resource use efficiency or savings in the cost of production, increase in the cropping intensity, diversification towards high value crop, improvement in real prices received by farmers, access to better markets, and shift from farm to non farm occupations. This paper will analyse how technology, institutional and policies can transform Indian agriculture so that this sector can contribute to the \$ 5 trillion economy.

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can enhance livelihood opportunities, strengthened resilience and increase the productivity per person in agriculture.

Need to Shift from Cereal Biased Policies: Government policies have been biased towards cereals particularly rice and wheat. It procures rice and wheat based on minimum support prices in few states. Cereal-centric policies also provide subsidies for fertilisers, water, power, credit and seeds. Large part of the subsidy goes to these two crops. These subsidies also benefit large farmers, few states and irrigated areas and have adverse impact on soil quality, water quantity and quality and human health. Punjab, Haryana and other states have been focusing mainly on rice and wheat because of government support to these crops.

There is a need to shift from cereal centric policies to non-cereal focused policies. Diversification of cropping pattern is obvious for improving agricultural growth, incomes of farmers and environmental sustainability. Agricultural credit for small and marginal farmers and digitization of land records. Beyond Harvest: warehousing, storage, value chains, food processing, exports: Agriculture has to go beyond farming and develop value chain, comprising farming, wholesaling, warehousing, logistics, processing, and retailing. Exports can be included in this holistic approach.

Policies to address market issues and fair price for farmers and sustainability: Encouraging contract farming through the State Governments by promulgating of Model Contract Farming Act, up-gradation of Gramin Haats to work as centers of aggregation and for direct purchase of agricultural commodities from the farmers, e-NAM to provide farmers an electronic online trading platform, distribution of Soil health cards to farmers so that the use of fertilizers can be rationalized, increase water efficiency through Pradhan Mantri Krishi Sinchayee Yojana (PMKSY)-“ Per drop more crop”, better insurance coverage to crops for risk mitigation under Pradhan Mantri Fasal Bima Yojana (PMFBY), providing total interest subvention up to 5 per cent (inclusive of 3 per cent prompt repayment incentive) on short-term crop loans up to R3 lakh, thus making loan available to farmers at a reduced rate of 4 per cent per annum and extended the facility of Kisan Credit Card (KCC) for animal husbandry and fisheries related activities .

Conclusion

Sustainable agricultural policy requires efforts to not only support and protect farmers from the vagaries of the monsoon and market forces but also to create an enabling institutional framework. Hence, we should emphasize on the importance of agricultural universities, extension services and cooperative institutions which will support small and marginal farmers. In spite of all these measures and in view of continuing restrictions on movements of people and vehicular traffic, concerns have been on the farm economy. This is the peak of rabbi season in India and crops like wheat, gram, lentil, mustard, etc. (Including the paddy in irrigated tracts) are at harvestable stage or almost reaching maturity. This is also the time when the farm harvests reach the mantis (market yards) for assured procurement operations by designated government agencies. Moreover, any severe disruptions to the supply of perishable fruits and vegetables, dairy products, fish etc. having mobilized to meet the increasing demand from bulging middle class as well as urban and rural consumers , may create irreparable damage to all actors in the supply chain. The migration of workers from few parts to their native place has also triggered panic buttons, as they are crucial for both harvesting operations and post harvest handling of produce in storage and marketing centers.

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