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Understanding the impact of Green Revolution on intraregional and interregional disparity

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Abstract
Proponents of Green Revolution have argued that the technologies employed are scale neutral. In this article contrast to this 'technical' view of the impact of Green Revolution, institutional view has been presented. In this article assuming that the unit cost of inputs are nearly 'scale neutral', I have tried to answer why many institutionalism predict that the Green Revolution would increase intraregional and interregional income disparities rather than diminish them And this is presented with reference to the studies on the impacts of Green Revolution in India.

Keywords: green revolution, technical, scale neutral

Introduction

The proponents of Green Revolution have argued that the technologies employed are scale neutral. It means that the inputs of agriculture i.e. seed, irrigation and fertilizers etc. are easily divisible and no appreciable change in unit cost of inputs are involved in altering the quantities used. Therefore, the Green Revolution should benefit both large and small farmers equally without any appreciable relative advantage to one or the other in use.

The Green Revolution was started in India in 1960s. The objective of the Green Revolution is to produce the surplus amount of food grains and become self-sufficiency by using the Green Revolution package namely High Yielding Varieties seeds-fertilizer technology for the whole country. Surplus food grain was produced successfully in India giving a huge boost to the agricultural sector by 250 per cent in the late 1960s and 70s. However, it is observed that the Green Revolution is confined to Punjab, Haryana and Western Uttar Pradesh (achieved high growth). The north-eastern state achieved moderate growth accepts Assam. The southern states also achieved moderate growth accepts Tamil Nadu. Bihar was the most affected states by the Green Revolution. The eastern India has tremble down after the Green Revolution. Moreover it was only advantageous to the large farmers. Addition to this point, surplus production of food grains is not the true measure of success of the Green Revolution. Many areas in India remain unaffected by this program and are still vulnerable. Thus, many institutionalism predict that the Green Revolution would increase intraregional and interregional income disparities rather than diminish them. Some of the important reasons that they have raised are discussed below.

Labour market effects

The adoption of the Green Revolution technology has led to significant increases in labour demand. This has been linked to increase in harvest and threshing labour associated with higher yields and increased cropping intensity facilitated by shorter duration varieties. So long as labour supply is less than perfectly elastic, such changes in labour demand will put upward pressure on wage rates in local labour markets, thereby affecting the incomes of all households in adopting areas for whom agricultural labour is a source of household income. This also results in increase the wage rate of farm households who do not sell labour to other farms, but for whom the implicit return to their on-farm labour will have changed. The impact of a new labour-using technology may extend outside of the area in which it is adopted if labourers in non-adopting areas are sufficiently mobile. In this event, if real wages due to increased labour demand rise sufficiently to cover the cost of changing locations, labourers from non-adopting areas may migrate to take advantage of better employment opportunities. In addition to the transfer of some of the benefits of the new technology to migrating individuals, this will also put upward pressure on wage rates in non-adopting areas. The potential for rural-rural migration to transfer some of the benefits of technological change to agricultural labour households in non-adopting areas (in the form of higher wages) has been widely recognized. There is evidence from India that the rapid diffusion of wheat HYVs in the Punjab in the late 1960s induced a large influx of labourers from other provinces and that this migration tended to equalize interregional wage disparity.

Land holding and other assets/Inefficiency of the small farmers

The diffusion of high yielding varieties would exacerbate rural poverty and accelerate the tendency toward the concentration of the landholding and other assets like tractor, tiller and hand pumps etc. The overall households' income varies widely. It depends upon the household endowments of human and physical capital (including land) and agronomic endowments of land owned by the household. The income variation of the households determines the distribution of the benefits from economic forces because technologies that have comparable productivity impacts across production environments of the households. It changes in the net revenues resulting from

downward shifts in marginal costs of production of the households. The socioeconomic groups located in areas in which the new technologies were adopted, examining the impacts of technological innovations on the incomes of various types of households and on returns to various factors of production owned by adopting households. Historically, both adoption levels and productivity impacts have been markedly higher for favored areas like Punjab, Haryana and western Uttar Pradesh (regional disparity) where the households (more large farmers are found) have owned large area of land and other assets. However, especially in the post-Green Revolution period in India, marginal areas have witnessed steady advances in the adoption of HYV's and other yield-enhancing technologies in the future.

Commodity market effected

The technological innovations have changed the prices in the commodity market in India. The surplus production by the technological innovation and double cropping in some irrigation regions increase the supply in the market. It leads to fall in the price level of the commodities. The consumers take advantage of the introduction of the new technology in the production process. The farmers who produced their output by the new technology gets profit whereas the farmers who did not used the technology have got welfare-loss due to high cost of production with the old method of production. Thus there will be increase in income of the large producers whereas decrease in the small producers. It caused in both the intraregional and interregional disparities in India. There are evidence that the price of wheat and rice came down and the small farmers even unable to sell their products in the market for low price in western India in 1970s. The large farmers were dominated the commodity market in India.

Attitudes of the small farmers towards risk and change

The cultivation of these new varieties usually required irrigation and the intensive use of fertilizers. Thus the necessary complements to high-yield cultivation were thought to be beyond the reach of the mass of poorer peasants. Furthermore, such new varieties were prone to pests and plant disease, which might destroy most or all of a crop. Under afford the risk involved if there is a crop failure, it was argue by institutionalists that even if peasants might be able to afford to adapt to the new varieties, they could not afford to accept the risk such varieties entailed and thus the rural income divide would widen causing both intraregional and regional disparities. This is what happened in India during the Green Revolution period. Only the large farmers could adopt the new technology because they have other non-agricultural source of income and hence they can take risk in producing the crops.This is why the small farmers in India have not adopted the new technology in rain-fed regions like north-eastern and eastern India.

Inadequate Infrastructure investment

In many backward regions having inadequate provision of infrastructure and social overhead capital such as schools and health clinics, roads dams and irrigation canals, crop storage facilities, farm extension services, agricultural research and farm credit programs are insufficient to support adoption of the high yielding varieties. Roads and water resources are fundamental to agriculture. Small cultivators in particular confront tremendous difficulties in bringing their output to urban areas for marketing due to substandard road system. It raises the cost of transportation inordinately and makes it more difficult for small producers to compete with larger ones. The lack of irrigation means that levels of production are less predictable due to the need to depend on the irregularities of rain. Health hazard is another major issue in rural areas in using the heavy machine (leads to accident) and chemicals used in the fields. In these regions, infrastructure often needed to stimulate a shift in production technologies are unavailable still remains to be done in this areas. Thus the regions which have better off in the infrastructure would increase the productivity and vice-versa. It has increased the interregional and interregional disparities in India. Possibly this is the reason why Punjab, Uttar Pradesh and Haryana were better off. Infrastructure deficiency states are like Odisha, Bihar, Chhattisgarh, north-eastern states etc. have not adopted fully the new technology.

Urban bias

Another institutional factor may be the urban bias for the intraregional disparity due to the green revolution. The agricultural sector is paid relatively little attention in the implementation of the most development strategies due to a complex of social forces and processes operating both in the developing nations. Small cultivators are often depicted pejoratively as peasants, tribal peoples, indigenous people, or dialect wear traditional clothing and live in a milieu which is to a very great degree seen as primitive and beneath those who occupy positions of political, social and economic power in the developing nation like India. Wide disparities in income between ethnic and those of the dominant group often reflect the pervasiveness and depth of urban bias as well as cultural and class differences. This disparity reflects differences in schooling and training, which are often a reflection of the lack of schools in the countryside and outright discrimination. In India, one in every seven of the population is lower-caste for whom agricultural employment is one of the few occupational opportunities available.

Credit Market

The financial sectors hesitate to establish banks in the small and medium-sized villages and towns. Bankers' are also rarely trained in agricultural production or its special problems and they are not necessarily receptive to the petition of farmers for credit particularly small and medium land holders. The formal credit is urban-biased extending loans to large farmers. It is also seen that agriculturally developed states in India have attracted huge amount of formal credit. Rural lending tends to be outside the interests of the urban center banks with loanable funds. Thus credit is often limited in rural areas. It pushes informal credit market to grow in under-developed areas. The local money lenders are set free to impose exorbitant interest charges which drain off a significant portion of the net proceeds of the farm income of the small borrowers. Moreover, the informal money lenders normally have a very limited supply of liquid funds to lend. Consequently, the level of borrowing from such sources will

likely be highly constrained. Inadequate amount of loans to small households and heavy loans to large farmers increases the disparity between them in the production of the agricultural land.

Corruption

Corruption is another institutional factor which causes the regional disparities in India. The power to capture the advantage of the Green Revolution is with the hands of politicians and local wealthy men. They force the government to provide the facilities in their locality. The small farmers and backward regions fall in the trap of corruption. Hence some parts of India are highly better off in developing infrastructure and credit whereas other parts still remains backward. Punjab, Haryana, Rajasthan, West Bengal, Maharashtra, Madhya Pradesh, Uttar Pradesh and Gujarat have made available the new technology in their regions because of the strong political holds where as other states could not.

Conclusion

After studying the criticisms raised by the institutionalists, it is concluded that the Green Revolution in India have increased the intraregional and interregional disparity. It has also reduced the fertility of the soil. Small and medium farmers could not adopt the new technology because of many constrains mentioned above. The backward regions have lacked the infrastructure leading to unsuitability to adopt the new technology. It has enforced them to leave the agriculture to earn their livelihood in the non-agricultural sector. Finally, the Green Revolution have caused urban centric. The government has to take action to provide suitable environment to the small farmers as well as the backward regions to adopt the new technology. The timely credit should be assured to the farmers. Irrigation land should be increased. The high yielding seeds, fertilizers and pesticides etc. should be made available in the local market at a subsided rate. This will make the Green Revolution successful.

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