Economic Reforms and Agricultural Growth in India

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It was argued that economic liberalisation would ensure a favourable shift in the terms of trade for agriculture in India, enabling producers to plough back surplus from cultivation to make long-term improvements on land, and raise agricultural productivity and growth rate. Contrary to expectations, there was no noticeable improvement in the terms of trade for agriculture during the reform period. Moreover, decline in capital formation in agriculture, inadequate expenditure on irrigation and extension services in rural areas, and a dearth of cheap institutional credit, resulted in a slowdown of agricultural growth and heightened livelihood insecurity for a substantial proportion of those dependent on agriculture.

Growth Rate of Agriculture

High growth of the agricultural sector is crucial for overall development of economy. In India, its importance is heightened with a substantial section of the population dependent on agriculture for employment. As per the National Sample Survey Office (NSSO), about 59% of male workers and 75% of women workers were dependent on agriculture in 2011–12 (NSSO 2014: 14). High agricultural growth is important to reduce rural poverty. It was argued that doubling of the rate of agricultural growth from 2% to 4% along with 9% rate of growth of the economy will reduce income disparities between the agricultural and non-agricultural sectors (Planning Commission 2006). In this context, it will be worthwhile to analyse growth rates of the agricultural sector, and evaluate its performance in the context of the overall economy, after the initiation of the reforms in 1991–92.

Table 1 (p 66) shows that the growth rate of gross domestic product (GDP) of agriculture has declined since the initiation of economic reforms in India. However, during this period, growth rates of GDP have been increasing except for the two years between 2010–11 and 2013–14. The table shows an increasing divergence between growth rates of GDP of agriculture and economy between 1990–91 and 2009–10, thereby indicating the declining importance of agriculture in the growth trajectory of India.
Declining contribution of agriculture is also reflected in terms of a steady decline in the share of agriculture in overall GDP. Table 2 shows that the share of agricultural output in GDP had declined by half between 1989–90 and 2013–14. This decline had started in the 1980s; however it was sharper in the 1990s and in the new millennium since 2000. The share of agricultural output in GDP had declined by 4.4 percentage points in the 1980s, the corresponding figures in the 1990s and post 2000 were 5.6 and 7.3 percentage points, respectively. This shows that the agricultural sector is losing its importance as an income generating activity at a faster pace with the onset of reforms in India. Expectations regarding performance of the agricultural sector as highlighted in the approach paper of Eleventh Plan (Planning Commission 2006) have not been realised.

Table 3 shows that the growth rates of production and yield of most of the major crops have declined in the years following the initiation of economic reforms as compared to the 1980s. Exceptions to this general trend were observed for pulses and cotton (2000–01 to 2009–10) for which growth rates of production and yield have increased, and sugar cane and wheat (1990–91 to 1999–2000) whose production increased marginally as compared to the 1980s.

Growth in production of foodgrains between 1981–82 and 2014–15 was largely due to the growth rate of the yield. In the period under study, highest growth rates in the yield of foodgrains were in the 1980s, the second phase of green revolution. Since the 1990s, growth in production of foodgrains was mainly driven by rice and wheat. The increase in growth rate of production of wheat, more pronounced since 2000–01, was largely due to expansion in area under cultivation. The decline in area under coarse cereals in all the sub-periods between 1981–82 and 2014–15, has been sharper with the onset of reforms.

It can be argued that increase in the acreage under wheat and rice cultivation has taken place at the expense of coarse cereals. The decline in area under cultivation of coarse cereals did not translate into a steep decline in production due to growth registered in yield rate in all the sub-periods. According to Dev and Pandey (2013: 82), growth in yield rate of coarse cereals can largely be attributed to adoption of the new seed technology.

There was a sharp rise in the production of oilseeds in the late 1980s and early 1990s due to quantitative restrictions on imports and technological modernisation programme of the government as part of Technological Mission on Oilseeds. Due to an increase in imports as part of trade liberalisation measures, there was a sharp decline in the area under cultivation and production of oilseeds. This can be seen from Table 3 where expansion in area under cultivation and growth rate of output of oilseeds had declined drastically in the 1990s as compared to the preceding decade. With the reintroduction of import duties on imports of oilseeds in 2001, and more favourable prices in the domestic market, there was an increase in the area and production, post 2000 (Ramachandran 2011). Import duty on crude edible oil was eliminated in 2010–11, from a high of 75% in 2004. This adversely affected domestic oilseed producers. Table 3 shows the decline in area, production and yield of different varieties of oilseeds between 2010–11 and 2014–15 (Sharma 2013).

Of all the major crops studied in Table 3, cotton has registered the highest rate of growth in the post-reform period, specifically between 2000–01 and 2009–10. Trends in cotton production show that increases in yield were the main factors for growth of output in the 1980s and in the 2000s; increases in area under cultivation were mainly responsible for the growth of output in other periods. Sharp increases in the yield rate between 2000–01 and 2009–10 were due to the adoption of Bt cotton technology in cotton growing areas in India. However, growth of yield rate and production of cotton declined between 2010–11 and 2014–15. It was argued that the high costs and risks associated with Bt cotton technology, particularly for subsistence farmers in low yield areas made cotton cultivation unviable. Also, increased use of pesticides even with the adoption of Bt cotton meant that pests (like bollworm) that were not major threats in Indian varieties of cotton.
Non-price Factors Affecting Agricultural Growth

Capital formation in agriculture: Capital formation is necessary for improving long-term growth potential in agriculture. Figure 1 shows that the share of agriculture and allied activities in gross capital formation in the economy was increasing in the mid-1960s, and this trend continued till the late 1970s. Higher growth rates of agriculture witnessed in the 1980s were due to the lagged impact of increases in the share of agriculture and allied sector in gross capital formation during the late 1960s and 1970s (Tables 1 and 3). However, since the 1980s, the share has shown a declining trend. There was a mild recovery during the late 1990s till 2001–02, and then the share declined again. The declining trend since the 1990s implies that there has been lesser investment in agriculture as compared to the non-agriculture sector.

Chand and Kumar (2004) argued that public capital formation has a long-term beneficial impact on agriculture as compared to subsidies whose impact is short-term. They estimated that a rupee spent on public sector capital formation contributes to GDP growth in agriculture by 35.21 over a period of 58 years. They contended that diverting 1% of resources from subsidies to public investment raises output by more than 2%, and is highly desirable in ensuring growth of agriculture GDP (2004: 5611–16). The trend of aggregate capital formation in agriculture since 1981–82 is shown in Table 4.

Table 4 shows that aggregate capital formation remained stagnant in the 1980s. Private and public capital formations moved in divergent directions. Decline in public capital formation continued well into the 1990s, and it was only in 2004–05 that public investment exceeded the levels attained in 1981–82. Private investment was increasing at a faster rate than public investment in the 1990s, and it was instrumental in raising total investment during this decade. Private and public investments had registered increases from 2004–05 to 2012–13, though the former increased at a faster rate than the latter. While public investment doubled, there was almost an eightfold increase in private investment over the three decades between 1981–82 and 2012–13. The share of public capital formation in total capital formation in agriculture had gone down from 52% in 1981–82 to 21% in 2012–13.

The agricultural sector will have a long-term adverse impact on growth rates with declining importance of public capital formation (Chand and Kumar 2004). There is a difference in the nature of public and private capital formation and contribution in the production processes, in which the former is mainly in the nature of public goods such as irrigation projects and road networks. These will not be provided by private capital. Thus, in terms of contribution to the production process, decline in public capital formation till 2004–05, is not adequately compensated by an increase in private investment in agriculture (Balakrishnan et al 2008).

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Table 5: Productivity of Irrigation for Foodgrains in Indian Agriculture (growth rates in %)

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<tbody>
<tr>
<td>Growth rate of gross irrigated area</td>
<td>2.67</td>
<td>2.98</td>
<td>1.11</td>
<td>1.36</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Growth rate of output of foodgrains</td>
<td>2.8</td>
<td>1.75</td>
<td>1.03</td>
<td>0.66</td>
<td></td>
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<tr>
<td>Productivity of irrigation</td>
<td>0.73</td>
<td>-0.53</td>
<td>-0.08</td>
<td>-0.7</td>
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the 1990s. As Rao noted, “there was a sharp decline in agricultural growth in east UP on account of severe cuts in the supply of power for pumping water, which was diverted to west UP to satisfy the powerful farm lobby” (2002: 1743). From 2000–01, growth rates of gross irrigated area and output declined sharply as compared to the preceding decades.

Although, the fact that assured supply of water is crucial for high agricultural growth is acknowledged in policy circles, the response of the government in terms of allocation of resources for extension of irrigation facilities in India has been inadequate. Table 6 shows the decline in the share of outlays on irrigation in GDP over time from the already low levels of the 1980s. Given the increase in GDP over this period, this means that lesser proportion of the income generated in the economy is ploughed back to enhance facilities of an input crucial for the agricultural growth. The decline in this ratio shows that in terms of allocation on irrigation, the policy pronouncements were not really implemented in practice.

Table 6: Share of Outlays on Irrigation and Flood Control in GDP (%)

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<tbody>
<tr>
<td>Share</td>
<td>1.4</td>
<td>0.7</td>
<td>0.7</td>
<td>0.7</td>
<td>0.8</td>
<td>0.6</td>
<td>0.6</td>
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</table>

Source: Computed from the Economic Survey of India, various years.

Role of credit: The policy of social and development banking, initiated with the nationalisation of commercial banks in the late 1960s, was rolled back on account of financial liberalisation. Reduced emphasis on priority sector lending with financial liberalisation had led to reduction in the availability of credit to small and marginal cultivators and made cultivation more expensive. Credit, particularly from the formal sector, is useful for farmers whose income is tied to the harvest, to smoothen consumption for the entire year. Reduction in bank branches in rural areas and declining credit–deposit ratios led to increased dependence of smaller cultivators on private moneylenders at exploitative conditions. These had made agriculture a loss-making activity and adversely affecting capital formation in agriculture (Dev 2009).

Figure 2 shows that the share of rural branches in total number of branches increased from 36.3% in 1975 to 58.2% in 1990. It declined from 57.2% in 1994 to 38.6% in 2014. Thus, by 2014, the share of rural branches had declined to a level very similar to that of 1975.

Figures 3 and 4 show the trends in credit–deposit ratio and shares of priority sector and agriculture in total outstanding credit of commercial banks respectively. Both declined in the 1990s as compared to the 1980s. Since 2001, however, there has been a turnaround, whereby there were steep increases in these ratios. Ramakumar and Chavan (2007) argued that increase in rural credit since 2001 was largely due to an increase in indirect finance in agriculture and definitional changes that incorporated export-oriented and capital-intensive agriculture under priority sector lending. They also argued that the main beneficiaries of this change were large agribusiness companies and big cultivators. The share of the latter in total credit outstanding and loan per account increased substantially between the mid-1990s and 2004–05. It can be argued that the revival of rural credit in the new millennium did not improve the performance of agriculture sector as compared to the 1980s, and neither did it benefit an overwhelming number of small and marginal cultivators.

Research and extension services: Extension and research are public goods that are prone to market failures, and hence the government has to take a leading role in investing in these activities. Mohan (1974) in a study on the productivity of Indian agriculture across 15 Indian states between 1953 and 1971 argued that states that showed highest productivity gains during this period had higher research intensity as compared to others.

Table 7: Estimated Marginal Internal Rates of Return (EMIRR) to Agricultural Research and Extension in India (%)

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<tr>
<th>Category/Study</th>
<th>Period of Study</th>
<th>EMIRR</th>
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<tr>
<td>Evenson and Jha (1973)</td>
<td>1953–71</td>
<td>40</td>
</tr>
<tr>
<td>Evenson and Mckinsey (1991)</td>
<td>1958–83</td>
<td>65</td>
</tr>
<tr>
<td>Rosegrant and Evenson (1992)</td>
<td>1956–87</td>
<td>62</td>
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<tr>
<td>Category/Study (Extension)</td>
<td></td>
<td></td>
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<tr>
<td>Rosegrant and Evenson (1992)</td>
<td>1956–87</td>
<td>52</td>
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This is a modified version of the original table. Source: Evenson et al (1999).
He also argued that agricultural research was primarily responsible for the success of green revolution in India. Table 7 (p 70) reports the estimated marginal internal rates of return (EMIRR) to agricultural research in India from various studies.

Despite these positive impacts, Evenson et al (1999) observed that the share of public spending on agricultural research and extension services in GDP of agriculture in India has been lower than that observed in the 1990s in developed nations (2% to 4%), and the average share in developing nations (0.75%).

Table 8 shows public expenditure on research and extension in agriculture and allied sector as a share of GDP of agriculture and allied activities. It shows that the share of public spending on research and extension in GDP of agriculture and allied activities was low since the 1960s, as well as in the subsequent decades. In other words, public spending on agricultural research and extension services did not increase after reforms.

### Price Factors Affecting Agricultural Growth

It was expected that with agricultural trade liberalisation, India will emerge as a major exporter of agricultural commodities which will lead to inflows of scarce foreign exchange reserves in the economy due to elimination of bias against agriculture after reforms. In view of these arguments, it will be interesting to analyse trends in the movements of terms of trade in agriculture. This is shown in Figure 5.

Figure 5 shows that the terms of trade had started to move in favour of agriculture in the 1980s, and this trend continued till 1994–95. It was stagnant till 1998–99, and worsening mildly till 2008–09, falling further after 2010–11. There were improvements in the terms of trade between 2009–10 and 2011–12 after which there was again a decline till 2013–14. In all, there was no marked improvement in the terms of trade for agriculture as was expected with the onset of reforms. In fact, in certain phases in the post-reform period, the terms of trade for agricultural producers worsened.

Furthermore, international prices of agricultural commodities are characterised by fluctuations in prices. Table 9 shows that international prices of most of the commodities, except for cotton (Egypt) and sugar, had declined in the 1980s. It recovered briefly till the mid-1990s, although international prices of most of the agricultural commodities in 1995 were lower as compared to 1981. Prices again went down in the late 1990s, and this trend continued till 2005. There was a brief recovery again between 2005 and 2010, after which prices declined. It can be seen that the price of all agricultural commodities in 2015 had gone down compared to 2010.

Ghosh (2010) points out that changes in regulations related to spot and futures commodity trading had given a major boost to speculative activities in commodity markets whereby speculators and financial firms—banks, pension funds, and hedge funds—increasingly entered the market in order to profit from short-term changes in prices. It meant that international prices of primary commodities, with a history of volatility, fluctuate more due to speculative activities of large financial firms to the detriment of a large agrarian population in developing economies like India.

In India, where almost 91% of households are marginal, small and medium farmers who cultivate on less than 2 hectares (5 acres) of land, exposure to fluctuations in international prices through greater participation in trade of agricultural commodities will endanger livelihood security of substantial sections of the population in rural areas. In a survey of eight villages across different states of India between 2005 and 2007, it was observed that a significant proportion of households across villages located in different agro-ecological settings with different irrigation and cropping patterns had negative incomes mainly due to losses suffered in cultivation of agricultural crops. This shows that income generating capacity in agriculture is under serious threat (Swaminathan and Rawal 2011).

Rao and Charyulu’s (2007) study on the basis of surveys between 2001 and 2004 conducted in six villages of Andhra Pradesh and Maharashtra found that except for two villages, incomes from crop production were negative for farmer households. This decreased income is due to losses suffered in cultivation of agricultural crops. This shows that income generating capacity in agriculture is under serious threat (Swaminathan and Rawal 2011).

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included large landowners. They argued that in 1975–78, when a similar study was conducted in these villages by the International Crops Research Institute for the Semi-Arid Tropics (ICRISAT), incomes from cultivation of agricultural crops were positive in all study villages. Their study brings out the following: first, there has been an increase in net annual household incomes across the study villages between 1975–78 and 2001–04. Second, the importance of agriculture as an income generating activity has gone down in the latter period. Third, not only has the share of agriculture gone down in the latter period, it has been generating losses for crop producing households in most of the study villages in 2001–04. Fourth, except for only one village, absolute incomes from crop production at constant 2001–04 prices, were higher in 1975–78 compared to 2001–04. Thus, the arguments that economic reforms would eliminate the bias against agriculture, thereby improving livelihood security of the rural population remain largely unfulfilled.

Conclusions

It was argued that with the initiation of reforms in 1991–92, the bias against agriculture will be reduced, there will be a shift in the terms of trade in its favour, and price incentives will favour producers to increase production. This would enable the producers to increase the surplus from cultivation of agricultural crops that can be ploughed back to make long-term improvements on land, undertake purchase of machines and farm implements that raise productivity of land. However, contrary to this expectation, the actual performance of the agricultural sector was not impressive in the post-reform period in comparison to the pre-reform period. Growth rates of the agriculture sector as a whole and across major crops cultivated in India have deteriorated, as has the importance of agriculture as an income generating activity. However, the sector remains the main source of employment in India. This implies that disparity in income generation between agriculture and other sectors, particularly services, has increased.

Non-price factors such as capital formation in agriculture (with an important role for irrigation), rural credit, and research and extension services were not given adequate importance in the post-reform period. Share of agriculture in gross capital formation started to decline in the 1980s, with no turnaround in the 1990s, the greatest casualty being public capital formation in agriculture. A similar pattern is witnessed for irrigation, where share of outlays in GDP and productivity have declined in the post-reform period. Trends in rural credit show that there has been a steady decline in rural branches of commercial banks in line with financial liberalisation initiated after reforms. There was a decline in credit–deposit ratio in the 1990s as compared to the 1980s, adversely affecting supply of credit in rural areas.

The increase in the credit–deposit ratio, as well as the share of priority sector and agriculture in total outstanding credit since 2001 were largely due to definitional changes benefiting large agri-business corporations and large cultivators. Agricultural research and extension are seen to have been systematically neglected during the reform period. It needs to be mentioned here that it was neglected prior to the initiation of reforms as well; this neglect further accentuated after the 1990s.

Expectations regarding improvements in terms of trade for agriculture did not materialise after the reforms. Besides, agricultural trade liberalisation has exposed domestic producers to the volatilities of international prices of agricultural commodities that have turned agriculture into an unviable occupation. Studies carried out in different parts of India have also shown that a significant proportion of households were earning negative incomes from crop production. Neither there has been any significant movement in the terms of trade in favour of agriculture after reforms, nor have the cultivators gained from more exposure to international markets and prices.

REFERENCES