

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.

It was argued that the initiation of reforms, liberalisation of external trade and corresponding price incentives would lead to enhanced investment, availability of crucial inputs, and increased output in agriculture. Moreover, it was expected that a shift in the terms of trade in favour of agriculture will improve agricultural exports and increase growth rate (Ahluwalia 1994). Favourable terms of trade were expected to have a positive impact in terms of raising agricultural production and private investment in India (Misra 1998: 2105–09). These expectations notwithstanding, policy measures adopted following the initiation of economic reforms, did not lead to increased rate of agricultural growth.

Economic liberalisation entails a set of measures that are inimical to petty production in general, and agriculture in particular. In that sense, these policies have a distinct class bias against petty producers and the poor. These policy pursuits resulted in a reduction of public investment in rural infrastructure, including irrigation, agricultural research and extension services and a decline in the supply of rural credit to small and poor cultivators, and the pursuit of agricultural trade liberalisation. In this paper, I have analysed how each of these policies have affected the agriculture sector in India.

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.

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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

Table 1: Growth Rates of GDP of Agriculture Sector and GDP of the Economy, 1981–82 to 2013–14 (%)

Periods	Growth Rate of Agriculture (%)	GDP Growth Rate (%)
1981–82 to 1989–90	2.9	4.7
1990–91 to 1999–00	2.8	5.3
2000–01 to 2009–10	2.4	6.8
2010–11 to 2013–14	2.1	3.7

Source: *Handbook of Statistics*, Reserve Bank of India, various years.

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.

of reforms in India. Expectations regarding performance of the agriculture sector as highlighted in the approach paper of Eleventh Plan (Planning Commission 2006) have not been realised.

Table 2: Share of Output from Agriculture in GDP, 1981–82 to 2013–14 (%)

Year	Share (%)
1981–82	29.6
1989–90	25.2
1994–95	23.5
1999–2000	19.6
2004–05	16
2009–10	12.3
2013–14	11.8

Source: Same as Table 1.

Table 3: Growth Rate of Area, Production and Yield of Major Crops, 1981–82 to 2014–15 (%)

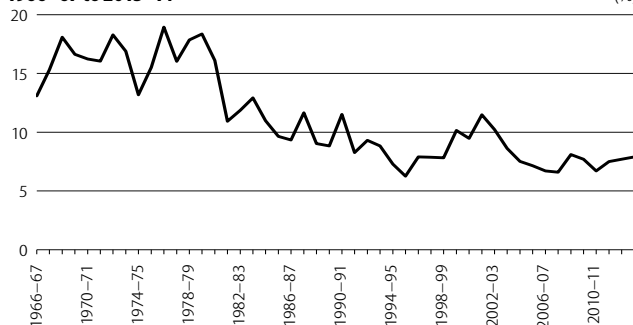
Crops	1981–82 to 1989–90			1990–91 to 1999–2000			2000–01 to 2009–10			2010–11 to 2014–15		
	Area	Production	Yield	Area	Production	Yield	Area	Production	Yield	Area	Production	Yield
Foodgrains	-0.2	2.8	3.02	-0.37	1.75	2.13	0.02	1.03	1.01	-0.75	0.66	1.4
Rice	0.39	3.66	3.25	0.56	1.9	1.33	-0.64	0.47	1.12	0.46	1.77	1.31
Wheat	0.66	3.23	2.55	1.3	3.31	1.99	1.01	1.49	0.47	1.27	0.47	-0.7
Coarse cereals	-1.31	1.25	2.58	-2.1	-0.75	1.4	-0.88	0.77	1.67	-3.15	-0.77	2.46
Total cereals	-0.2	2.95	3.15	-0.12	1.94	2.05	-0.26	0.9	1.19	-0.26	0.8	1.07
Pulses	-0.2	1.24	1.43	-1.53	-0.6	0.94	1.35	2.85	1.47	-2.63	-0.12	1.5
Oilseeds	2.1	3.81	1.67	0.05	1.07	1.02	1.32	3.04	1.69	-1.12	-3.85	-2.76
Groundnut	1.78	1.29	-0.49	-1.88	-3.51	-1.64	-1.78	-1.6	0.14	-4.35	-4.5	-0.16
Rapeseed and mustard	1.36	6.31	4.9	0.42	1	0.6	2.24	4.66	2.38	-3.45	-5.06	-1.67
Soyabean	18.73	20	0.87	9.28	10.54	1.15	4.25	6.55	2.22	2.93	-3.73	-6.47
Cotton	-0.52	4.2	4.75	1.59	1.6	0	1.73	9.7	7.8	3.07	1.46	-1.6
Sugar cane	0.84	2.14	1.31	1.35	2.19	0.82	-0.33	-0.12	0.2	1.04	0.97	-0.06

Source: Computed from the *Handbook of Statistics*, Reserve Bank of India, various years.

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

Figure 1: Share of Agriculture and Allied Sectors in Gross Capital Formation, 1966–67 to 2013–14 (%)

Source: Planning Commission of India and *Agricultural Statistics at a Glance* (2015).

cotton started to have an adverse impact on the yield rate of cotton (Gutierrez et al 2015).

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

Table 4: Capital Formation in Agriculture, 1981–82 to 2013–14 (₹crore, 1999–2000 prices)

Year	Public Investment	Private Investment	Total
1981–82	12,723	11,549	24,272
1982–83	12,665	13,467	26,132
1983–84	12,962	14,816	27,778
1984–85	12,488	12,938	25,426
1985–86	11,248	12,960	24,208
1986–87	10,667	13,051	23,719
1987–88	10,981	17,816	28,797
1988–89	10,302	15,564	25,866
1989–90	8,909	17,132	26,041
1990–91	8,938	29,116	38,054
1991–92	7,901	16,634	24,535
1992–93	8,167	22,862	31,030
1993–94	8,907	19,230	28,137
1994–95	9,706	17,183	26,890
1995–96	9,560	17,777	27,336
1996–97	9,225	20,589	29,814
1997–98	7,812	24,692	32,504
1998–99	7,949	24,956	32,905
1999–2000	8,668	41,483	50,151
2000–01	8,085	37,395	45,480
2001–02	9,712	47,266	56,978
2002–03	8,734	46,934	55,668
2003–04	10,805	42,737	53,542
2004–05	16,187	38,309	54,496
2005–06	19,940	42,629	62,569
2006–07	22,987	44,167	67,154
2007–08	23,257	52,745	76,002
2008–09	20,572	68,137	88,709
2009–10	22,693	70,640	93,333
2010–11	19,854	72,181	92,035
2011–12	21,184	86,958	1,08,142
2012–13	23,886	88,371	1,12,257
2013–14	23,191	72,446	95,637

Source: Planning Commission of India and *Agricultural Statistics at a Glance* (2014).

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.

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

Year	1981–82 to 1989–90	1990–91 to 1999–2000	2000–01 to 2009–10	2010–11 to 2012–13
Growth rate of gross irrigated area	2.07	2.28	1.11	1.36
Growth rate of output of foodgrains	2.8	1.75	1.03	0.66
Productivity of irrigation	0.73	-0.53	-0.08	-0.7

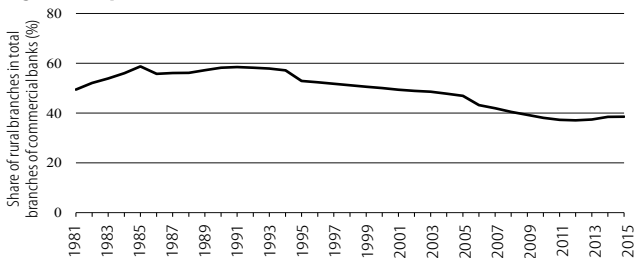
Source: Same as Table 3.

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).

In India, irrigation accounts for 90% of gross capital formation in agriculture. Table 5 shows productivity of irrigation for foodgrains in Indian agriculture. It was argued that increase in the irrigated area under foodgrains was largely responsible for increase in foodgrains output, and hence growth of foodgrains output with respect to growth of irrigation is a good measure of changes in the productivity of irrigation water (Rao 2002).

Table 5 shows that productivity of irrigation was highest in the 1980s. It was a period when green revolution was broad-based, with the inclusion of rice growing regions in eastern India. Growth rate of irrigated area increased marginally in the 1990s as compared to the 1980s; growth rate of output of foodgrains declined during this period. Decline in productivity of irrigation in the 1990s was due to a loss of momentum in the development of yield-increasing technologies such as cultivation of drought-resistant crops. This loss of momentum is directly related to the decline in public expenditure on research. Also, the political economy of irrigation from groundwater sources had a significant role in reducing productivity of irrigation in

Figure 2: Proportion of Rural Bank Branches in Total Branches, 1981–2014 (%)



Source: Computed from the *Handbook of Statistics*, Reserve Bank of India, various years.

the 1990s. As Rao noted that, “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 (%)

Year	1981–82	1990–91	1995–96	2000–01	2005–06	2011–12	2013–14
Share	1.4	0.7	0.7	0.7	0.8	0.6	0.6

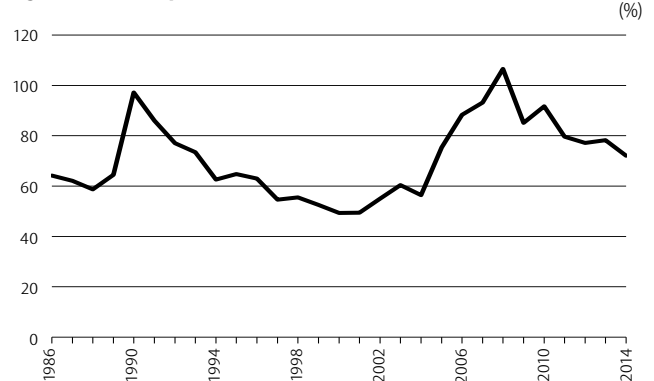
Source: Computed from the *Economic Survey of India*, various years.

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 reduced the ability of farmers to reinvest surplus, thereby 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.

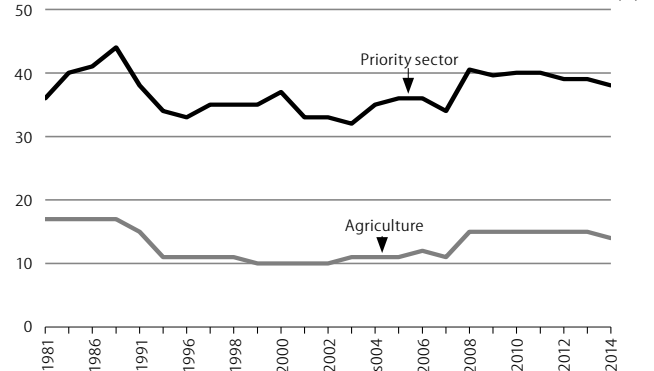
Figures 3 and 4 show the trends in credit–deposit ratio and shares of priority sector and agriculture in total outstanding credit of commercial banks respectively. Both declined in the 1990s as compared to the 1980s. Since 2001, however, there has

Figure 3: Credit–Deposit Ratio of Commercial Bank in Rural Areas, 1986–2014 (%)



Source: Computed from the *Handbook of Statistics*, Reserve Bank of India, various years.

Figure 4: Shares of Priority Sector and Agriculture in Total Outstanding Credit of Commercial Banks (%)



Source: Computed from the *Handbook of Statistics*, Reserve Bank of India, various years.

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 (%)

Category/Study (Research)	Period of Study	EMIRR
Evenson and Jha (1973)	1953–71	40
Kahlon et al (1977)	1960–73	63
Evenson and Mckinsey (1991)	1958–83	65
Rosegrant and Evenson (1992)	1956–87	62
Evenson et al (1999)	1956–87	58
Category/study (Extension)		
Rosegrant and Evenson (1992)	1956–87	52
Evenson et al (1999)	1956–87	55

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 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.

Table 8: Public Expenditure on Research and Extension in Agriculture and Allied Sector as Share of GDP of Agriculture and Allied Activities (%)

Year	Research and Education	Extension
1960–62	0.21	0.09
1970–72	0.23	0.14
1980–82	0.39	0.11
1989–91	0.41	0.16
1992–94	0.40	0.15
1995–97	0.38	0.14
1998–2000	0.44	0.15
2001–03	0.52	0.13
2004–06	0.52	0.13
2009–10	0.30	0.06
2011–12	0.32	0.05

Source: Balakrishnan et al (2008). Figures for 2009–10 and 2011–12 are computed by the author from Finance Accounts, Comptroller and Auditor General of India.

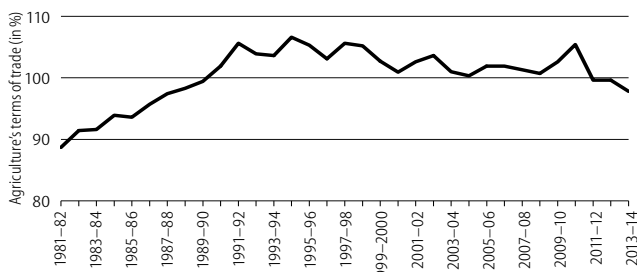
Price Factors Affecting Agricultural Growth

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

Figure 5: Movements of Terms of Trade in Indian Agriculture, 1981–82 to 2013–14



Index numbers are based on triennium ending 1990–91=100.

Source: Price Policy Reports, Commission of Agricultural Costs and Prices.

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

Table 9: Annual International Prices of Selected Agricultural Commodities, 1981 to 2015 (\$, current prices)

Period	1981	1986	1991	1995	2000	2005	2010	2015
Commodities								
Wheat, US	178	115	129	179	119	158	243	232
Wheat, Argentina	191	89	100	167	120	131	253	226
Rice, Thailand	483	210	314	322	204	288	521	380
Sugar (cents/pound)	9	6	9	13	8	10	21	13
Soyabean, US	288	209	240	259	212	275	450	390
Soyabean oil, The Netherlands	507	343	454	625	338	544	1,005	757
Sunflower oil, EU	639	366	474	693	392	677	1,074	846
Groundnut oil, The Netherlands	1,043	570	895	991	714	1,060	1,404	1,337
Cotton, Egypt (cents/pound)	155	147	226	NA	109	101	170	NA
Cotton, US (cents/pound)	89	57	82	104	66	59	103	75

Prices of sugar and cotton are in US cents/pound, the rest are in US dollars/tonne.

Source: United Nations Conference on Trade and Development.

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.

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