POLICY BRIEF 20

Agricultural Growth During the Reforms and Liberalization: Issues and Concerns

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After initiation of economic reforms during the year 1991-92 India emerged as one of the fastest growing economies of the world. However, the growth rate of GDP has slightly slowed down after 1996-97. Policy makers and planners are seriously concerned about this deceleration and are looking for measures to put the economy on higher growth path. Performance of agriculture sector is crucial to realise the goal of raising GDP growth for two reasons. One, agriculture continues to be the largest sector of Indian economy and contributes 22.6 percent of total national output (refers to the triennium 2001-02 to 2003-04). This implies that 1 percent increase in agriculture output pushes up growth rate of total economy by 0.22 percent. Conversely 1 percent decline in agriculture output pulls down the growth rate of total economy by 0.22 percent. Two, due to strong forward and backward linkages with rest of the economy performance of agriculture causes significant effect on growth rate of non agriculture sector, particularly in the case of industry. Recent empirical evidence suggests that one percent change in agriculture growth results in 0.38 percent change in growth rate of industrial output (Bhanumurthy and Sinha 2004).

This paper looks at the growth experience of Indian agriculture during the recent period of economic reforms and liberalisation and compares it with the past. Growth rates are examined for aggregate of agriculture sector and for various groups of commodities. Changes in the growth rates in the recent years are analysed in detail to find out whether there is any deceleration in growth rates in the recent years, as pointed out by some studies, and also because of more relevance of recent experience to growth rates in near future.

The paper is organised into three sections. The First section comments on some methodological issues concerning growth rates in agriculture. Second section discusses growth experience since 1950-51 and examines if there is deceleration in growth rate in the recent years. The last section comments on the prospects for realising 4 percent growth rate in agriculture as envisaged in the National Agriculture Policy 2000 and tenth five year plan.

Methodological Issues

Lot of confusion and disagreement about growth rate of agriculture results from the definition of agriculture followed by various researchers. Agriculture sector in India at broad level is taken to include crop, livestock, fisheries and forestry. Out of these, crop and livestock together are often termed as agriculture or agriculture proper. Some researchers use broad definition of agriculture, some include only crop and livestock in agriculture while some use index of production of principal crops to designate agriculture. There is a need to bring some clarity in relation to use of different concepts of output to have proper understanding about growth of agriculture.

Index number of principal crops prepared by Directorate of Economics and Statistics is very widely used to represent growth rate in agriculture though it clearly and explicitly implies that livestock output, whose share has continuously risen in the agriculture output for quite long, is not included in it. This index has turned inadequate for representing even crop sector. The reason is that 46 crops covered in the index do not include large segment of fruits and vegetables. While potato, onion, banana, cashewnut, tapioca and sweet potato are included, the index excludes all fresh vegetables and fruits, except banana, which represent dynamic horticulture sector of India. It is worth mentioning that during 1990-91 to 2000-01 share of fruits and vegetables in value of crop output has increased from 18 percent to 23 percent. Therefore exclusion of important fruits and vegetables, as is the case with the index number of principal crops, results in under-estimation of growth rate of crop sector in the said period. One way to overcome this limitation is to use data on value of crop sector at constant prices published by CSO as that includes value of fruits and vegetables.

Another limitation of agriculture output data is that due to use of common inputs in crop and livestock activities, separate estimates of value added or GDP in crop sector and that in livestock sector are not available. Thus, separate growth rate for these two sub sectors can be obtained only in respect of value of output and not for value added output.

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Table 1: Growth rates in output of economy and agriculture sub sectors at 1993-94 prices

Period	GDP				Value of output			
	Total	Non agriculture	Agri-culture	Fishing	Livestock	Crop sector	Fruit/ Veg	Crops other than fruit/veg
1950-51 to 1959-60	3.68	4.91	2.93	5.79	1.42	3.06	0.56	3.44
1960-61 to 1969-70	3.29	5.00	1.27	4.00	0.41	1.70	5.82	1.09
1970-71 to 1979-80	3.45	4.72	1.94	2.90	3.92	1.79	2.88	1.55
1980/81 to 1989-90	5.38	6.78	3.13	5.82	4.99	2.47	2.36	2.48
1990/91 to 1999/00	6.19	7.40	3.28	5.46	3.82	2.99	5.97	2.26
1990/91 to 1995/96	5.56	6.63	3.16	7.49	4.25	2.65	4.93	2.13
1996/97 to 2001/02	5.53	6.85	1.75	2.72	3.47	1.28	4.55	0.34

Keeping these characteristics of data in mind this paper computes growth rates for (a) GDP agriculture which includes crop and livestock (b) GDP fishery (c) value of output of crops, livestock, horticulture crops and non horticultural crops and (d) physical production of important crops/groups.

Growth Rates since Independence to Trade Liberalisation

Agricultural production over time is affected by interacting influences of technological, infrastructural, and policy factors. After mid 1960s, Indian government started intervening in agriculture sector to create favourable environment for exploitation of technological potential. This was done by creating enabling infrastructure through public investments and by policy changes affecting agricultural marketing, production, processing and trade. During the decade of 1980s public investments in agriculture started falling. Despite this decline, output of agriculture sector showed higher growth rate compared to the previous three decades (Table 1). This could be made possible by spread of modern technology to wider areas, increase in crop intensity, crop diversification, increased use of technology enhancing inputs driven by market forces and policy support. The decade also witnessed some improvement in terms of trade in favour of agriculture.

During the decade of 1990s declining trend in public sector investment that set in year 1979-80 continued for most part of the decade (Annexure I). However, terms of trade were kept favourable to agriculture sector during 1990s (Annexure I) by hiking level of cereal prices through government support, trade liberalization, exchange rate devaluation and disprotection to industry. Several researchers felt that as economic reforms focused mainly on price factor and ignored infrastructure and institutional changes the overall impact on growth of agricultural sector has not been favourable. This argument is supported by citing deceleration in output of agriculture sector in post reforms period (Mujumdar 2002, Bhalla 2002, Kumar 2002). There is a particular concern about the decline in public sector investments in agriculture, as can be seen from the data presented in Annexure I. Several studies have shown public investments have strong effect on agricultural productivity and growth in India (Chand 2001; Gulati and Bathla 2001; Shangen et. al. 1999).

Our estimates for decadal growth rates showed that total and agricultural and non agricultural GDP followed acceleration during the reform decade (Table 1). The increase was modest for agricultural sector but quite large for non agricultural sector. Within agriculture, output of crop sector showed better growth during reform whereas output of livestock showed deterioration. Further, within crop sector, growth rate of output of horticulture sector (fruits and vegetables) during the decade of economic reforms turned out to be more than double as compared to the pre reform decade. It is worth noting that output of horticultural sector increased annually by about 6 percent during the reforms which is double the growth rate in total crop output. Excluding fruit and vegetables, output of crop sector showed a decline in growth rate to the level of 2.26 percent during 1990s as compared to 2.48 percent during 1980s. Likewise, GDP of fishery sector also witnessed setback in growth rate during the reforms.

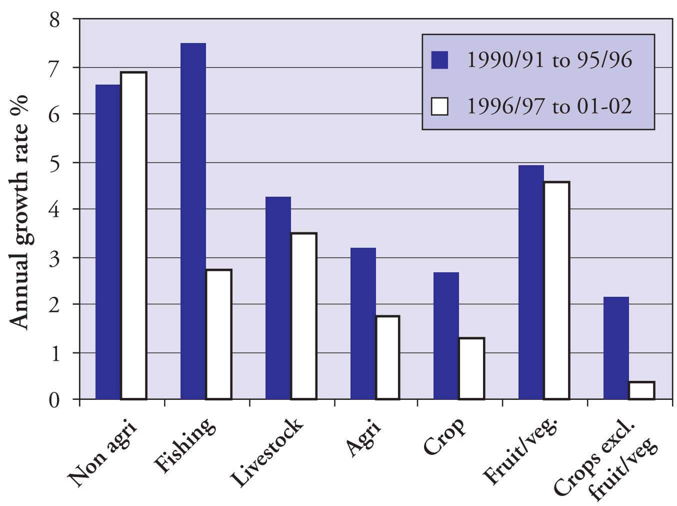
Though agricultural growth rates during 1990s by and large present favourable situation there have been frequent protests by farmers' groups and reports of distress from the countryside about adverse impact of WTO on agriculture. It is possible that decadal

Table 2: Identification of the year showing deceleration in growth rates in GDP of economy and agriculture sub sectors at 1993-94 prices

Period	GDP				Value of output			
	Total	Non agriculture	Agri-culture	Fishing	Livestock	Crop sector	Fruit/ Veg	Crops other than fruit/veg
1990/91 to 1995/96	5.56	6.63	3.16	7.49	4.25	2.65	4.93	2.13
1990/91 to 1996/97	6.01	7.04	3.69	7.41	4.12	3.22	5.92	2.59
1990/91 to 1997/98	6.09	7.26	3.35	6.90	3.95	2.92	5.91	2.21
1990/91 to 1998/99	6.16	7.33	3.43	5.90	3.89	3.10	6.14	2.36
1990/91 to 1999/00	6.19	7.40	3.28	5.46	3.82	2.99	5.97	2.26
1990/91 to 2000/01	6.12	7.38	3.01	5.07	3.76	2.66	5.88	1.84
1990/91 to 2001/02	6.06	7.29	2.95	4.96	3.73	2.58	5.78	1.76

Box I

Growth rates during pre and post WTO periods



growth rates conceal the true picture of growth experienced in pre and post WTO period. This was investigated by estimating separate growth rates for the two sub periods viz. 1990-91 to 1995-96 and 1996-97 to 2001-02, former representing domestic reforms before WTO and latter representing liberalisation following WTO. Growth rates for these two sub periods reveal a totally different story than what is seen from the decadal data.

As it can be seen from Table 1 and Box I, growth experience of Indian agriculture after mid 1990s was totally different than the experience before mid 1990s. GDP of agriculture sector showed annual growth rate of 3.16 percent during 1990-91 to 1995-96, after which it declined to 1.75 percent. Growth rate of fishery between the pre and post WTO periods declined from 7.49 percent to 2.72 percent. Growth rate in output of livestock sector decelerated from 4.25 percent to 3.47 percent. Likewise, growth rate in output of crop sector after 1996-97 plummeted to less than half of what it was during 1990-91 to 1995-96. As a result, crop sector, which forms largest segment of agriculture, showed poorest growth during post WTO period in the history of post Independence India. Further, within crop sector, output of fruits and vegetables, which showed spectacular growth during 1990s, also followed deceleration in the recent years. Post WTO period turns out to be highly adverse to crop sector excluding fruits and vegetable as its output did not increase even at 0.5 percent per annum. These results indicate that initial years of reforms were somewhat favourable for raising growth of agriculture sector but after 1995-96 the sector showed very poor growth rate.

In order to see precisely in which year deceleration in agricultural growth started, the growth rates were estimated between fixed base 1990-91 and extending the terminal year from 1995-96 onwards. These results are presented in Table 2 which show that growth rate of agriculture sector reached peak by 1996-97 and slowed down after that. There is a continuous deceleration in the growth rate of livestock output after 1995-96. Growth rate in output of horticultural crops kept increasing till 1998-99 after which slowdown set in.

Growth rates for important commodities and commodity groups presented in Table 3 indicate decline in growth rates of cereals, pulses, oilseeds, cotton, sugarcane, fishery, milk and eggs after 1995-96. The growth rate turned negative in oilseeds and cotton which saw decline in their output alongwith pulses.

The slowdown in agriculture growth rate after mid 1990s seems to have resulted from couple of factors. One, there is deterioration in terms of trade for agriculture towards late 1990s and beyond, mainly due to impact of depressed international prices of most of agricultural commodities on domestic prices. Two, output price intervention remained confined to already developed regions where crop yields have approached plateau and prices have little scope to improve supply response. Agriculturally underdeveloped regions which have potential for raising productivity and production did not have favourable output price environment. Three, despite lot of concern public investments in agriculture did not increase to keep pace with the needs and output growth. Four, adoption of new and improved technology remained slow. Five, there is a widely held view that large scale imports of some

Table 3: Production performance of selected commodities/ groups before and after trade liberalization as revealed by growth rates

Commodity/Groups	Before WTO 1990/91 to 1995/96	After WTO 1996/97 to 2001/02	Change During WTO
Foodgrain	1.51	1.17	Decline
Cereals	1.81	1.71	Decline
Pulses	-0.66	-2.56	Decline
Wheat	3.27	1.12	Decline
Paddy	1.53	2.25	Rise
Oilseeds	3.91	-3.94	Decline
Sugarcane	2.92	1.74	Decline
Cotton	5.53	-6.06	Decline
Onion	2.96	3.76	Rise
Milk	4.34	4.14	Decline
Egg	5.36	4.10	Decline
Fish	5.16	2.25	Decline

commodities in post WTO period caused adverse affect on their output. These are the probable causes. There is a need for quantitative study to establish exact role of these and other factors in influencing India's agriculture growth.

Conclusions

The growth rate analysis shows that initial years of reforms were somewhat favourable for agricultural growth but post WTO period witnessed sharp decline in growth rate of almost all commodity groups one by one. The current growth rates are too low to achieve the goal of 4 percent growth in output as envisaged in the National Agriculture Policy. If corrective measures are not initiated soon to reverse the deceleration in agricultural growth than the growth targets of 10th five year plan would not be met. Another disquiet aspect of recent growth process is that agriculture and non agriculture sector are on a disparate growth path. The probable causes for slowdown in agriculture growth are adverse impact of depressed international prices on domestic prices, neglect of price intervention for underdeveloped region having large growth potential, slowdown in adoption of improved technology, and stagnation in public investments in agriculture for a long time.

Annexure I:Public sector investments in agriculture and index of terms of trade between agriculture and non agriculture sectors

Year	Public sector Gross Fixed Capital Formation	Public sector GFCF as % of GDP agriculture	Index of terms of trade Base triennium ending 1990-91=100
1960-61	2400	2.20	—
1970-71	3216	2.34	—
1980-81	7358	4.62	—
1981-82	6998	4.17	88.7
1982-83	7020	4.21	91.4
1983-84	7089	3.88	91.6
1984-85	6699	3.62	93.9
1985-86	6005	3.22	93.6
1986-87	5738	3.10	95.7
1987-88	6004	3.28	97.4
1988-89	5733	2.71	98.3
1989-90	4911	2.29	99.4
1990-91	4871	2.18	101.9
1991-92	4400	2.00	105.6
1992-93	4549	1.96	103.9
1993-94	4996	2.06	103.9
1994-95	5406	2.13	106.6
1995-96	5318	2.11	105.3
1996-97	4942	1.79	103.1
1997-98	4467	1.66	105.6
1998-99	4459	1.55	105.2
1999-00	4764	1.67	102.7
2000-01	4468	1.48	102.8
2001-02	—	—	102.3

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