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An Assessment of the Data**

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# **Agricultural Productivity Growth and the Non-farm Sector in India: An Assessment of the Data**

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## **Abstract**

**This paper looks at the data on agricultural productivity and rural farm nonfarm employment. Using a panel dataset of 14 major Indian states from 1973-93, we show that while at a national level, there has been a steady improvement in the TFP performance in Indian agriculture, at a regional level the productivity increase has been very uneven. Combining this with the data on farm and nonfarm employment, it is evident that the TFP growth in each state can be linked to the nonfarm employment generation in the rural areas. The downturn in agricultural performance from the late 1980s can also be attributed to slowdown in the nonfarm sector in many states.**

**Keywords: Agricultural productivity, nonfarm employment, India.**

# **Agricultural Productivity Growth and the Non-farm Sector in India: An Assessment of the Data**

## **I. Introduction**

In this paper, we explore the data on the total factor productivity (TFP) growth in agriculture and the trends in the nonfarm employment in India from 1970 to 1993. This is the period following the introduction of the green revolution technology when there was an attempt to increase productivity in agriculture through increasing use of scientific farming methods and inputs across the whole of the country. We look at the disaggregated data regarding the performance of different states of India during this period. We would be interested in capturing the differences and the similarities in the experience among the fourteen major agricultural states studied here.

We also compare the development of the non-agricultural sector in the rural areas across the states. While conventional wisdom holds that a growing agriculture is essential for rapid growth in non-farm employment, recent papers have pointed out the significance of the reverse causation. That is, the improvement in non-agricultural employment and consequently income scenario is essential for the health of agriculture from both the demand and the supply sides. The non-farm sector is a source of intermediate inputs and final consumption goods for agriculture, and a thriving non-farm sector in the rural areas reduces the need to rely on imports from urban areas for such goods. On the supply side, income from non-farm activities helps agricultural households to smooth out risk and consumption shocks related to a bad harvest year. Given the availability of credit facilities and infrastructure, this will induce the farmer to invest more in land, intermediate inputs and equipment, thereby improving productivity.

## II. TFP growth in agriculture in Indian States:

### 2.1 Data Sources and Measurement

The dataset employed is a panel of fourteen states of India that are considered to be the most economically important from 1973 to 1993. This dataset has been compiled by the World Bank and the International Food Policy Research Institute (IFPRI) in collaboration with various agencies of the Government of India.<sup>1</sup>

Productivity growth in agriculture is measured as total factor productivity (TFP) index which is the ratio of total output to total input. The Törnqvist-Theil index is used to construct the TFP growth as follows:

$$\ln TFP_t = \sum_i 0.5 * (S_{i,t} + S_{i,t-1}) * \ln(Y_{i,t} / Y_{i,t-1}) - \sum_i 0.5 * (W_{i,t} + W_{i,t-1}) * \ln(X_{i,t} / X_{i,t-1}) \quad (7)$$

where  $\ln TFP$  is the log of the total factor productivity index;  $S_{i,t}$  and  $S_{i,t-1}$  are output  $i$ 's share in total production value at time  $t$  and  $t-1$ , respectively; and  $Y_{i,t}$  and  $Y_{i,t-1}$  are quantities of output  $i$  at time  $t$  and  $t-1$ , respectively. Farm prices are used to calculate the weights of each crop in the value of total production.  $W_{i,t}$  and  $W_{i,t-1}$  are cost shares of input  $i$  in total cost at time  $t$  and  $t-1$ , respectively; and  $X_{i,t}$  and  $X_{i,t-1}$  are quantities of input  $i$  at time  $t$  and  $t-1$ , respectively. Thirty crops (rice, wheat, jowar, bajra, maize, ragi, barley, gram, other pulses, groundnut, sesame, linseed, rapeseeds and mustard, castorseed, safflower, nigerseed, coconut, soybeans, sunflower, potato, tapioca, sweet potato, banana, cashewnut, coffee, jute, sugarcane, onion and fruits) and three major livestock products (milk, chicken, and sheep and goat meat) are included in total production. Farm prices are used to calculate the output shares.

Five inputs (labor, land, fertilizer, tractors and animals) are included. Labor input is measured as total female and male labor (including both family and hired)

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<sup>1</sup> The states in alphabetical order are: Andhra Pradesh, Bihar, Gujrat, Haryana, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Orissa, Punjab, Rajasthan, Tamil Nadu, Uttar Pradesh and West Bengal.

engaged in agricultural production. A conversion ratio of 0.7 has been used to convert female labor to its male labor equivalent. Land is measured as net cropped area; fertilizer input is measured as the total amount of nitrogen, phosphate and potassium uses; tractor input is measured by the number of four-wheel tractors (including both private- and government-owned); and animal input is measured as the number of draft animals (total buffalos). Wages of agricultural labor are used as the price of labor; rental rates of tractors and animals are used for their respective prices; and fertilizer price is calculated as a weighted average of the prices of nitrogen, phosphate and potassium. The land price is measured as the residual of total revenue net of measured costs for labor, fertilizer, tractors and bullocks.

Table 1 provides the data on TFP growth for the states under consideration. We index the series using the values of 1970 as the base year. Since agricultural production and consequently TFP is prone to fluctuations, the base year is chosen such that it can be considered a 'normal' year in terms of absence of any year-specific shock.

[ Insert Table 1 here ]

## *2.2 Performance of Indian Agriculture until the late eighties*

For the whole of India, the TFP has shown an acceleration from the early '70s to the late '80s. While from 1973 to 1980, the trend growth rate was 1.45 percent, it increased to 2.33 percent in the decade of the eighties. However, from the late eighties onwards, there has been a discernable decline in the rate of TFP growth, being only 1.21 percent from 1989 to 1993. Recent data coming out of India also shows the same trend. Thus, it can be inferred that the decade of the seventies was the time when total factor productivity was being affected by the introduction of new technology, which were termed as the "Green Revolution". It gathered strength in the first half of the eighties, when the growth in TFP peaked. The experience of the years from the second

half of the eighties can be taken as an indication of the fact that the so-called 'Green Revolution' technologies have run their course, and it would be difficult to sustain a high rate of TFP growth in the absence of major technological breakthrough in the field of agricultural science.

We can see from the data given in Table 1 that there has been a wide variation in the rate of TFP growth across regions of India over the period 1973-93. Some states have done better than others in terms of their agricultural performance, with West Bengal and Punjab being the frontrunners. The divergence in productivity is captured by Figure 1, which shows the fluctuations in the TFP growth across states over the whole time period.

A closer examination reveals that ~~there~~ the states can be broadly divided into ones that are 'high-performing' and those that are 'low-performing' on the basis of their performance vis-à-vis the all-India TFP growth. In the former case, eight out of the fourteen states have shown very substantial improvement in agricultural productivity (over 2 percent throughout the period). On the other hand, the 'low-performing' states have managed moderate improvements in TFP, while two states, Gujrat and Kerala, have recorded negative rates of TFP growth for the entire period. Therefore, the All-India data on TFP masks important and widespread regional disparities in agricultural performance across the regions of the country.

The slowdown in overall TFP growth is brought into focus if we analyze the growth rates over the three subperiods across states. In the first period from 1973-80, the two major agricultural states of north India, Punjab and Haryana, had the best performance among all the states. This is mainly because they got a head-start regarding the introduction of modern technologies in foodgrain production, which then spread to other states of the country. Also interesting is the fact that those states with a

high degree of industrial concentration, especially that of rural industry, such as Gujrat, Maharashtra and West Bengal, also had substantially high rates of TFP growth, indicating that the adoption of the 'Green Revolution' technologies were better in those regions. The second period from 1980-88 saw and better TFP performance in nearly all the states (except Gujrat, Maharashtra and Kerala), but was marked by a slowdown in the TFP growth in Haryana and Punjab, possibly due to diminishing returns to technology in agriculture. Overall, this period saw the fruits of technology being harvested by most major agricultural states in India, and went a long way towards the achievement of self-sufficiency in foodgrain production by the early 1980s.

### *2.3. Trend Since the Late Eighties*

From the late eighties onwards, there is substantial evidence of an overall slowdown in TFP growth in India, as can be seen from Table 1. Major agricultural states in north India, such as Bihar, Uttar Pradesh, Punjab and Rajasthan recorded very minor or even negative rates of TFP growth in this period. However, Haryana, Karnataka, Kerala, Maharashtra, Orissa and West Bengal all recorded significant productivity gains. As we shall see shortly, this can be attributed towards greater non-agricultural rural employment in these states that may also explain the stagnation in agriculture in other parts of India.

### **III. Rural Non-Farm Employment Growth in India:**

For examining the employment trends in the rural non-farm sectors, especially the male-female differentials, the National Sample Surveys (NSS) are the best to draw upon. However, we must be aware of the benefits and the limitations that the data poses for analysis.



First, the history of employment data is limited because temporally comparable data started being collected on a systematic basis only since 1972-73. Specific to our requirement, NSS data on farm and non-farm components of employment are available for seven points of time: 27th round (covering October 1972- September 1973), 32nd round (July 1977- June 1978), 38th round (January-December 1983), 43rd round (July 1987 - June 1988), 50th round (July 1993- June 1994), 53rd (January - December 1997) and 54<sup>th</sup> (January-June 1998).

There was a gradual deregulation of the Indian economy from the second half of the eighties, culminating in the macroeconomic structural adjustment policies from the beginning of the nineties. Under this regime, the government had to reduce its public expenditure and lift protection for the domestic industry. Thus, for comparison of the changes in employment patterns, the pre-1987/88 years are designated as the pre-reform period, while the latter period relates to the post-reform regime with data for 1993-94 and 1997/1998. The availability of 1997/1998 data thus lends more firmness to our ideas on the employment effects of the structural adjustment policies and globalisation in the rural non-farm sector.

It is worth pointing out that NSS data on employment are gathered under two separate arrangements. In the 'full sample', detailed employment/unemployment surveys are conducted quinquennially, using a big sample size and covering the whole country. Data for 1972-73, 1977-78, 1983 1987-88 and 1993-94 belong to these types of surveys. Under 'thin sample', based on a small sample size, some selected aspects of employment/unemployment are worked out sometimes on yearly basis. The 1997 and 1998 data used by us belong to the second group of surveys. For the analysis of employment, the smallness of the 1997/1998 sample size should not disturb the

continuity of trends thrown up by data from the earlier rounds since most of the states we consider are fully represented in the small sample as well.

What we see is in the earlier period (1977-78 to 1987-88) is a fast pace of growth of employment in nearly all the sectors both for rural male and female workers. In fact, in some sectors such as mining and quarrying, manufacturing and construction, the rate of growth of employment has been more for females than males in rural areas. (Table 2). For males, the highest growth rates were recorded in utility, transport-communication, finance-real estate, and mining and quarrying. We can generally see a tendency of the workforce growth to be divided into sectors where male and female workers were dominant. While male workers in general tended to move to the tertiary sector, the women were absorbed almost wholly into the sectors mentioned above, especially construction. Overall, from the late 70s to the late 80s, the total non-agricultural employment was nearly 4 percent for rural males and more than 5 percent for rural females.

[Insert Table 2 here]

However, in the latter period, from 1987-88 to 1997-98, there were significant reverses in this progress. Most importantly, the female workforce structure actually went into reverse gear. The reason for this retrogression is the shrinkage of job opportunities in the very sectors where female labour had started moving into, namely construction, mining and quarrying and manufacturing. Between 1987-88 and 1993-94, there was a decline of over 15 percent in construction jobs for rural female workers. From 1993-94 to 1997-98, in all sectors of the rural economy except agriculture, there was a decline in the female workforce, which was eventually absorbed into agriculture. Thus the share of agriculture in the workforce for both male and female increased between 1987-88 and 1997-98.

Thus it can be said with a significant degree of confidence that the policy changes in the mid-1980s led to a visible slowdown in the growth of employment in the non-agricultural sector in rural India. As a consequence, labour moved into agriculture especially in the case of female labourers. Compared to the earlier period in which the availability of non-farm sector jobs helped to sustain a high rate of TFP growth in agriculture as seen in Table 1, a reduction in government spending in rural infrastructure coupled with lesser protection for rural small and medium enterprises and greater competition from the urban sector led to a slow growth in the non-farm sector employment and consequently, a sharp reduction in the rate of TFP growth for the agricultural sector as a whole.

To see this more clearly, we construct an annual series of agricultural and non-farm employment using the NSS data for the period 1973-93. As mentioned earlier, the last survey of rural employment in 1997 and 1998 uses a different sample, and is thus left out of the comparison. Using the annual series, Table 3 shows the ratio of agricultural to non-agricultural employment for both males and females in the rural areas for the fourteen states. Analysis of the table draws attention to several interesting facts that are obscured by aggregated data in Table 2.

[Insert Table 3 here]

Firstly, there has been a decline in the ratio of farm to non-farm employment in every state of India over the entire period. However, this decrease has not been uniform across the various states of the country. The trend rate of decline has varied from a high of 5.89 percent in the case of Rajasthan to a low of 0.79 percent in the case of Bihar. If we consider the three subperiods, we can see that in the first (1973-1980), except four states, the rest all had negative growth in the ratio of the agricultural to non-agricultural employment. In the second period (1981-1988), all states had

unambiguously negative rates of decline, which sustained a high TFP growth in this period. The situation changed again in the last sub-period (1989-1993), when seven states showed an increase in the ratio of agricultural to non-agricultural employment, implying that the rate of increase in employment in the former were greater than the latter, which corresponds to data in Table 2.

We can compare the decline in productivity in agriculture to the change in the farm-nonfarm employment ratio across regions as in Figures 2 and 3. What we can clearly see is that the states that have had an increase in agricultural employment in the last period have either had negative rates of TFP growth or have experienced stagnation in agricultural productivity, with Orissa being the only exception. In the rest of the states, declines in the farm-nonfarm employment ratio has not only sustained a high rate of TFP growth, but in cases like Haryana, Karnataka, Maharashtra and Kerala and West Bengal, have improved TFP significantly.

[Insert Figure 2 and Figure 3 here]

Thus, we can infer that the regions where non-farm employment has increased even in the face of a general slowdown caused by macroeconomic shocks external to the rural sector as in the last subperiod, the rate of TFP growth has been maintained, and in most cases have exceeded that of the previous decade, which has been the most fruitful in terms of productivity in Indian agriculture. In such a case, rural nonfarm employment can be said to have very important implications for food security, alleviation of poverty, agricultural performance and the general transformation of the rural economy, as has been the experience in Japan, South Korea, Taiwan and most recently, China.

#### **IV. Conclusion**

The detailed analysis presented above points to a very symbiotic relationship between the rural farm and the non-farm sector. It should be remembered that the nonfarm sector has existed in the rural areas of India throughout history. In the pre-colonial times, metalwork and textiles used to be the usual small-scale industries employing a significant portion of the labour force. After their relative decline during the British rule, the post-Independence period from the 1950s ushered in a new era of activity in the nonfarm sector in the rural areas, supported by protective policies of the government.

At the same time, agriculture became the focus of economic policymaking after independence, with the target of achieving self-sufficiency in agricultural production, especially foodgrains from the first Five Year Plan itself. The introduction of 'Green Revolution' technologies served to facilitate that process. However, a substantial debate ensued as to whether there the 'Green Revolution' had an impact on agriculture for the nation as a whole. Recent studies on regional inequalities in India have shown that differences in agricultural productivity has been one of the major causes of unequal regional income distribution and development performance. This paper puts both sides of the argument in perspective. There has been substantial improvements in TFP at the national level, but also a wide divergence of productivity performance at the regional level.

What this paper also addresses is to take a more holistic approach towards rural development by including the nonfarm sector in the overall picture. There is reasonable ground to argue that development of the nonfarm sector, especially with regard to employment generation, is one of the factors behind sustained growth in productivity in agriculture. States like West Bengal and Haryana that have been able to

achieve a substantial reduction in the share of employment in the agricultural sector in rural areas have had an unequivocally better TFP growth performance as well. This goes to show that the emphasis needs to be in formulating a development strategy that takes into account both the farm and the nonfarm sectors in rural India. It should also focus on the development of rural core infrastructure such as roads, electricity and irrigation, as well as financial and social infrastructure such as banking and education to create the necessary environment for such activities to be profitable.

**Table 1: Index of TFP Growth Rates, Various States and All India (1970=100)**

YEAR	Andhra Pradesh	Bihar	Gujrat	Haryana	Karnataka	Kerala	Madhya Pradesh	Maharashtra	Orissa	Punjab	Rajasthan	Tamil Nadu	Uttar Pradesh	West Bengal	All India
1973	114.52	82.44	83.53	81.22	100.41	105.2	90.84	116.95	102.61	106.92	82.9	109.3	91.23	95.35	99.38
1974	119.75	90.63	49.38	78.54	102.92	104.16	103.98	120.48	86.49	113.13	74.96	86.46	95	106.51	95.59
1975	118.05	101.32	98.76	107.49	104.43	106.37	111.57	137.16	106.7	123.74	91.69	114.83	104.51	113.45	109.28
1976	94.57	98.97	96.24	109.29	79.11	99.57	90.15	141.92	89.65	126.55	90.89	106.68	109.32	111.41	103.74
1977	112.21	103.24	89.43	115.95	113.28	101.63	105.16	147.31	106.07	141.37	90.09	125.55	112.48	120.8	112.82
1978	113.01	104.01	91.48	130.53	110.61	101.87	99.59	142.08	105.97	147.68	101.42	130.02	116.57	127.11	114.82
1979	94.16	87.19	83.94	95.74	103.31	102.56	72.34	145.11	88.12	142.5	77.55	123.99	85.13	118.16	98.48
1980	96.77	109.78	85.85	116.29	92.3	100.11	108.39	146.35	120.51	142.16	88.95	106.69	121.98	131.45	112.08
1981	117.34	101.55	99.17	114.67	100.53	98.12	111.68	156.57	122.34	154.75	98.09	127.82	124.72	122.34	117.71
1982	106.69	106.66	82.39	120.63	97.57	98.98	112.05	147.96	115.13	156.04	109.62	101.22	132.42	119.16	115.85
1983	117.41	127.52	109.59	121.21	107.41	94.8	132.76	159.9	142.02	157.25	118.61	118.36	138.39	144.82	128.48
1984	95.85	129.18	99.08	132.45	104.31	94.06	120.09	148.19	151.51	167.57	107.56	131.31	135.34	150.38	124.83
1985	102.14	133.32	54.8	153.36	94.74	89.1	130.03	130.43	150.99	174.27	108.43	148.78	137.69	187.19	128.07
1986	100.29	131.08	72.22	143.44	108.39	86.51	113.43	115.78	140.71	164.27	92.03	120.37	148.55	179.37	123.85
1987	121.52	124.75	36.11	113.28	107.5	82.66	124.68	157.54	130.2	171.62	89.15	140.75	145.97	183.9	126.23
1988	142.77	135.43	72.22	193.67	116.26	82.53	143.3	158.6	154.8	173.25	154.01	136.24	158.48	203.64	148.25
1989	127.49	131.79	53.11	125.35	107.38	86.98	132.92	210.08	152.03	188.69	114.5	143.37	150.27	211.95	140.18
1990	125.08	136.62	49.28	140.42	103.49	88.45	149.17	150.64	147.79	184.41	130.71	138.83	148.46	217.13	138.64
1991	121.16	129.67	62.78	137.89	109.24	97.62	134.4	141.52	173.87	183.25	115.03	135.49	147.55	227.14	138.75
1992	119.97	119.94	64.18	156.95	123.32	103.6	140.42	161.02	196.51	182.41	129.74	137.75	149.9	225.91	144.11
1993	127.27	137.71	49.86	158.78	130.69	109.78	149.19	167.91	210.58	189.73	113.27	136.13	150.26	236.36	146.10
Trend Growth Rate (percent)															
1973-80	-2.71	2.31	3.02	4.93	-0.04	-0.63	-0.91	3.14	1.62	4.51	1.13	2.58	2.19	3.79	1.45
1981-88	1.92	3.46	-9.74	4.76	1.71	-2.91	2.24	-0.82	2.65	1.71	1.16	2.71	2.85	7.85	2.33
1989-93	-0.45	-0.43	1.37	5.84	5.68	6.23	1.71	4.54	9.36	0.32	-0.29	-1.11	0.01	2.58	1.21
1973-93	0.77	2.25	-2.64	2.74	1.01	-0.61	2.41	1.14	3.73	2.49	2.17	1.56	2.63	4.62	2.02

**Table 2: Rural Non-agricultural Employment in India:**

Production Sectors	Rural Males			Rural Females		
	77-78 to 87-88	87-88 to 93-94	93-94 to 1997	77-78 to 87-88	87-88 to 93-94	93-94 to 1997
Agriculture	0.30	1.37	2.92	3.41	1.49	1.90
Mining & Quarrying	4.18	1.46	-3.46	9.51	1.20	-23.81
Manufacturing	2.78	0.53	1.68	4.91	1.48	-5.05
Utilities	5.55	1.47	1.40	-	-	-
Construction	0.19	-1.00	3.66	18.06	-15.74	-30.85
Trade	3.5	2.74	0.54	3.00	1.21	-26.53
Transport-Communication	5.98	3.09	2.20	14.6	1.2	-
Finance, Real Estate, etc.	8.43	1.45	-5.64	-	-	-
Community & Personal Services	2.3	3.66	2.49	1.47	2.83	-14.37
Total Non-Agriculture	3.83	1.52	1.60	5.17	0.17	-16.54
All Sectors	1.48	1.92	2.60	3.65	1.24	-1.25

Source:

1. For 1977-78/1987-88 growth rates, Chadha G.K., *Indian Journal of Labour Economics*, July-September, 1993, p.302.
2. Growth rates for 1987-88/1993-94 are computed from data in Govt. of India, *NSS Report No. 409*, June 1996, pp.52-56, 82-86 and *NSS Report No. 409*, March 1997, pp. A154-A161.
3. Growth rates for 1993-94/1997 are computed from data in Govt. of India, *NSS Report No. 409*, March 1997, pp. A154-A161



Table 3: Agriculture and Non-Agriculture Employment Ratio 1973-93, Major States

YEAR	Andhra		Bihar	Gujrat	Haryana	Karnataka	Kerala	Madhya		Orissa	Punjab	Rajasthan	Tamil Nadu	Uttar Pradesh		West Bengal
	Pradesh	Pradesh						Pradesh	Nadu					Pradesh	Bengal	
1973	3.67	4.62	4.62	5.21	4.02	5.76	1.26	9.42	4.68	4.43	3.86	5.41	3.06	4.54	3.53	
1974	3.75	4.68	4.68	5.25	3.90	5.59	1.29	9.17	4.56	4.65	3.78	5.26	2.98	4.43	3.52	
1975	3.83	4.73	4.73	5.29	3.78	5.43	1.33	8.94	4.44	4.89	3.71	5.12	2.90	4.34	3.51	
1976	3.91	4.79	4.79	5.33	3.66	5.27	1.37	8.70	4.33	5.13	3.64	4.98	2.82	4.24	3.50	
1977	3.99	4.85	4.85	5.37	3.55	5.12	1.41	8.48	4.22	5.39	3.57	4.84	2.74	4.14	3.49	
1978	4.08	4.92	4.92	5.41	3.44	4.95	1.45	8.26	4.10	5.62	3.50	4.71	2.83	4.05	3.48	
1979	3.82	4.82	4.82	5.10	3.29	4.86	1.44	7.94	4.07	5.23	3.49	4.64	2.79	3.99	3.35	
1980	3.58	4.72	4.72	4.81	3.14	4.77	1.42	7.63	4.04	4.86	3.48	4.56	2.74	3.93	3.21	
1981	3.35	4.63	4.63	4.53	3.00	4.69	1.41	7.33	4.00	4.52	3.47	4.49	2.70	3.87	3.08	
1982	3.14	4.53	4.53	4.27	2.86	4.60	1.39	7.04	3.97	4.21	3.46	4.42	2.65	3.81	2.96	
1983	2.94	4.44	4.44	4.02	2.73	4.52	1.38	6.77	3.94	3.91	3.45	4.35	2.61	3.76	2.84	
1984	2.91	4.35	4.35	3.74	2.60	4.44	1.37	6.81	3.90	3.59	3.44	4.26	2.22	3.69	2.72	
1985	2.89	4.26	4.26	3.27	2.55	4.29	1.32	6.54	3.69	3.42	3.09	3.49	1.82	3.71	2.69	
1986	2.88	4.17	4.17	2.86	2.51	4.16	1.27	6.28	3.49	3.27	2.77	2.86	1.49	3.72	2.66	
1987	2.87	4.08	4.08	2.50	2.47	4.02	1.23	6.03	3.30	3.12	2.48	2.35	1.22	3.73	2.63	
1988	2.86	4.00	4.00	2.18	2.44	3.90	1.18	5.80	3.13	2.98	2.20	1.87	1.87	3.74	2.60	
1989	2.90	4.09	4.09	2.23	2.26	3.87	1.18	5.96	3.12	3.09	2.19	1.94	1.94	3.65	2.46	
1990	2.94	4.17	4.17	2.27	2.10	3.84	1.17	6.12	3.10	3.20	2.18	2.00	2.03	3.56	2.32	
1991	2.97	4.26	4.26	2.32	1.95	3.81	1.16	6.28	3.09	3.32	2.17	2.07	2.07	3.47	2.19	
1992	3.01	4.35	4.35	2.36	1.82	3.78	1.15	6.45	3.08	3.44	2.16	2.14	2.18	3.39	2.07	
1993	3.05	4.45	4.45	2.41	1.69	3.75	1.14	6.63	3.06	3.56	2.15	2.23	2.21	3.31	1.96	
Trend Rates of Growth(Percent)																
1973-80	0.13	0.51	0.51	-0.76	-3.45	-2.75	2.01	-2.93	-2.23	2.02	-1.54	-2.49	-1.45	-2.09	-1.11	
1981-88	-1.91	-2.11	-2.11	-10.64	-2.91	-2.66	-2.55	-3.18	-3.19	-5.95	-6.74	-12.77	-9.89	-0.45	-2.41	
1989-93	1.28	2.12	2.12	1.96	-7.34	-0.78	-0.66	2.65	-0.44	3.53	-0.53	3.31	3.31	-2.44	-5.62	
1973-93	-1.77	-0.79	-0.79	-5.51	-4.07	-2.22	-0.95	-2.31	-2.28	-2.83	-3.41	-5.89	-2.81	-1.33	-2.95	

Figure 1: Employment Ratio (Agriculture to Non-agriculture) and TFP, 1973-93

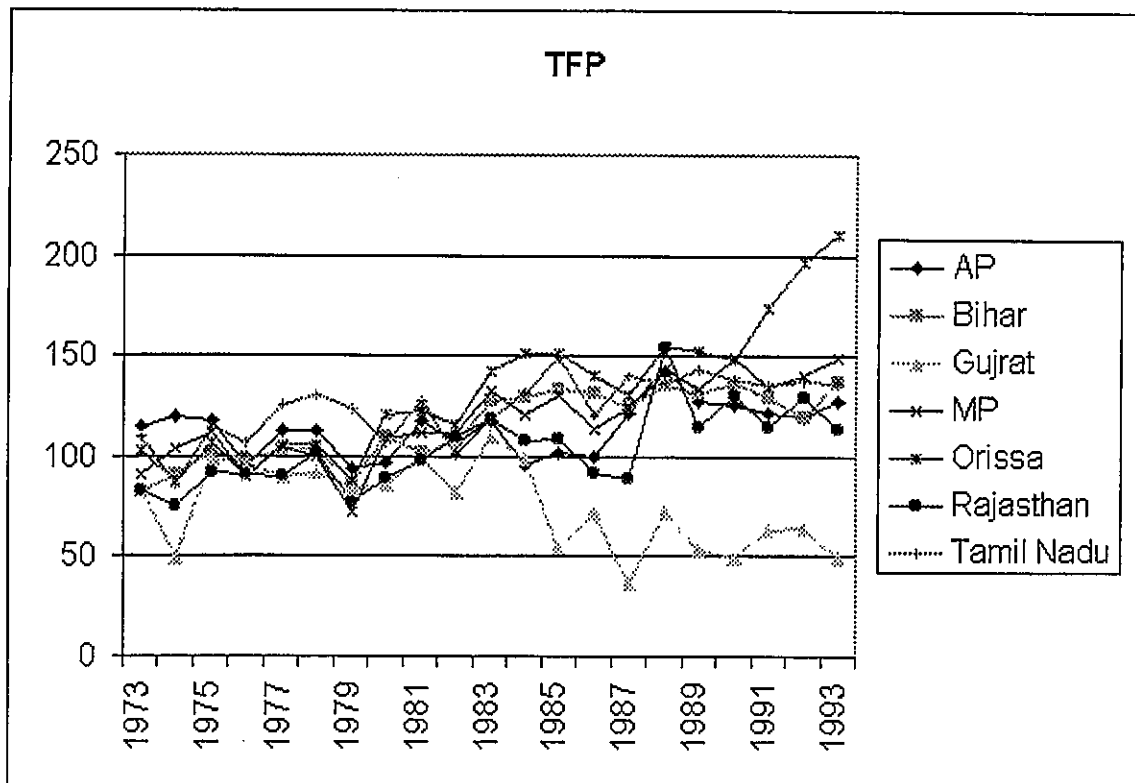
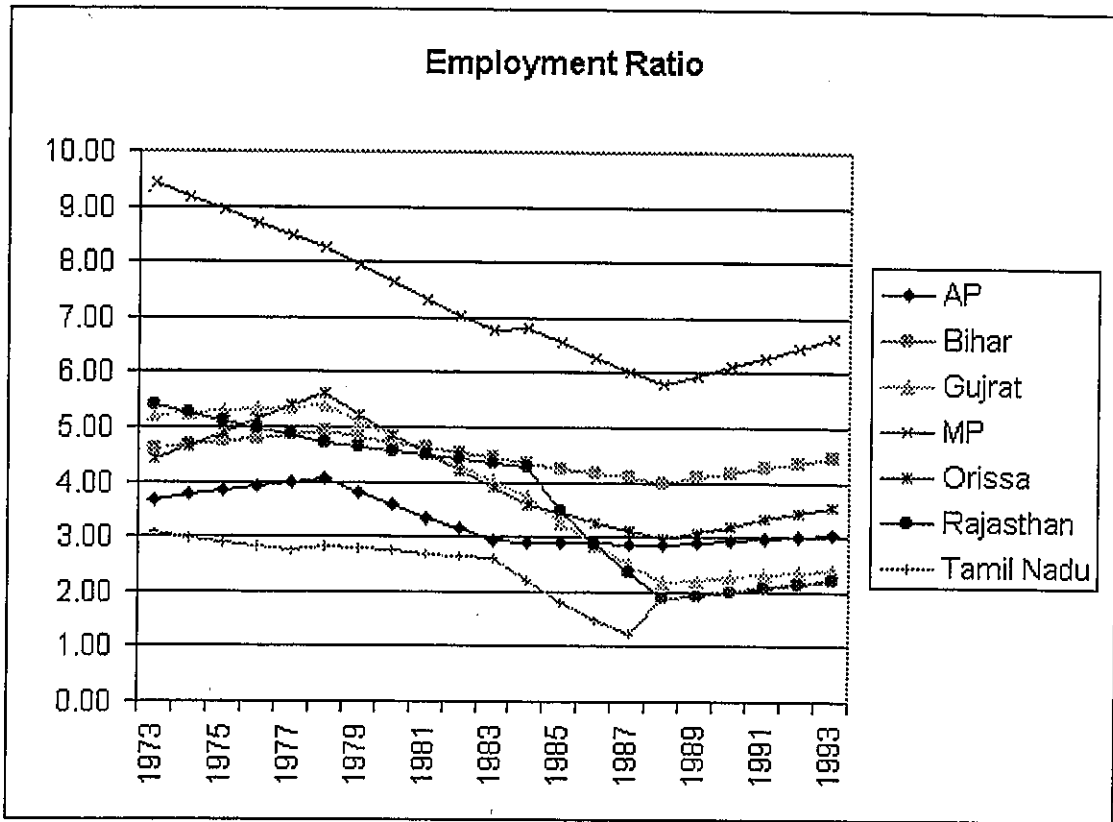


Figure 2: Employment Ratio (Agriculture to Non-agriculture) and TFP, 1973-93

