Regional Sources of Growth Acceleration in India

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Abstract

Gujarat, West Bengal, Karnataka, Maharashtra, Kerala and Tamil Nadu were the major contributors to the growth acceleration in India after 1991-92. Although the Regional Disparity may increase temporarily, causality test provides support to the hypothesis about spread effects. The Regional growth targets assigned by the 11th Plan in India seem to rely on the spread effects of economic growth acceleration in the better off states to achieve its 9 percent growth target and reduce regional disparity in the long run. To strengthen spread effects, the domestic economy should be further integrated and interlinked with free flow of goods, services and factors of production.

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I. Growth Acceleration in India

Research on identifying distinct phases in the growth history of India has almost conclusively established as of now that there have been four different phases of economic growth since the beginning of the twentieth century. There have been debates and differences in findings and opinions on the exact break dates in the long term growth path in the national economy (see, for instance, Ganesh, 1992; DeLong, 2001; Wallack, 2003; Panagaria, 2004; Sinha & Tejani, 2004; Hatekar & Dongre, 2005; Nayyar, 2006 and Balakrishnan & Parameswaran, 2007). Most of the researchers approached this problem by first identifying significant changes in economic policies around a year and tested their hypotheses of the growth shift from the pre-identified year empirically with observed data. The exceptions to such an approach to identify the break-dates for growth of the Indian economy were the studies by Ganesh (1992) and Balakrishnan & Parameswaran (2007). Both these studies derived the exact break-dates endogenously from the data set itself rather than pre-identifying and testing for statistical significance. While Ganesh (1992) used the Quandt-test (1960) to identify one break point at a time, Balakrishnan & Parameswaran (2007) used Bai & Perron (1998 and 2003) method to identify multiple break points simultaneously. Both the studies identified only one break point in the growth history of post-Independence period in India although the exact dates differed marginally. Since the latter study (Balakrishnan & Parameswaran, 2007) used longer time series and the latest methodology, the authors claimed that their findings were more reliable. However, in response to a comment (Dholakia R.H., 2007), when they revised their estimates using the same methodology but the most recent data on GDP with base year 1999-00, they found two instead of one break points in the post-Independence growth history of India (see, Balakrishnan & Parameswaran, 2007a).[i]

Thus, as per the established findings as of now, there are four distinct phases of economic growth through which the Indian economy progressed since the beginning of the twentieth century. These phases and the corresponding approximate growth rates observed are given in Table 1.

Table 1 : Continuous Compounded Annualized Growth Rates (CAGR) of Real GDP by Phases in India

Sl.No.	Time Period	CAGR	Acceleration (in percent-age points)	CAGR of Population	CAGR of PCI	Acceleration in percentage points
1	1900-01 to 1950-51	1.0%	-	1.0%	0%	-
2	1950-51 to 1980-81	3.4%	2.4	2.2%	1.2%	1.2
3	1980-81 to 1991-92	5.3%	1.9	2.1%	3.2%	2.0
4	1991-92 to 2003-04	5.9%	0.6	1.8%	4.1%	0.9

Source : Basic data on GDP from Sivasubramonian (2000) and CSO (2007)

It can be seen from the table that during the first 50 years of the twentieth century, when India was under the British rule, the economy was almost stagnant. Maximum acceleration of 2.4 percentage points in the growth rate of aggregate Gross Domestic Product (GDP) was achieved during the first 30 years of Independence. The acceleration in the growth rate of per capital income (PCI) was however limited to only 1.2 percentage points p.a., because the population growth accelerated. Maximum acceleration of 2 percentage points was achieved in the growth of PCI during the next decade (the nineteen eighties), when the GDP growth accelerated further and population growth decelerated. During the first 13 years of the wide ranging economic reforms, when the GDP growth further accelerated with the population growth further decelerating, the rate of acceleration in growth of PCI sharply fell to only 0.9 percentage point. The growth acceleration in aggregate GDP although positive is sharply declining during the three phases of growth in the second half of the twentieth century in India.

The sources of growth and acceleration during these phases of the growth history have been studied using four different approaches. The first one of these is the neo-classical growth approach of functional distribution of labour, land, capital and technical progress (see, Dholakia B.H., 1974 and 2001; and Sivasubramonian, 2004). These studies found technical progress to be the major source of growth as well as acceleration in growth during the second half of the twentieth century. The second approach was to consider

institutional ownership between the public and the private sector (see Dholakia B.H., 1980 and 2001). The findings were interesting. During the first 30 years of Independence, it was the technical progress particularly in the Public Sector Undertakings that contributed substantially to the growth of GDP and hence to the growth acceleration of 2.4 percentage points. However, in the subsequent period, it was the private sector particularly the private corporate sector that was mainly responsible for the growth acceleration. The third approach was of considering the sectoral classification of GDP (see, Dholakia B.H., 1974 and 2001; Sivasubramonian, 2004; Ganesh, 1992; and Balakrishnan and Parameswaran, 2007). Although the findings of these studies vary, it is established that the non-agricultural sector, particularly the tertiary sectors drove the economy both during the eighties and the nineties, contributing substantially to the growth acceleration.

The fourth approach of considering regional aspects of growth has been relatively ignored with only one attempt being made (see, Dholakia R.H., 1994). The study considered 20 state economies and three broad sectors in each of them to identify the break dates endogenously in the growth path during the period 1960-61 to 1989-90 using the Quandt test (1960). Thus, the study (Dholakia, R.H, 1994) had identified regional sources of growth acceleration between phases 2 and 3 of Table 1. The sectoral dimension in the study provides a very different perspective on the sources of growth acceleration from the one based only on the nation-wide aggregative sectoral approach (see, Dholakia R.H, 2007). The findings of the study are summarized for ready reference in Table 2.

It is seen from Table 2 that only 7 state economies experienced growth acceleration before the national break date. These states were Bihar in 1967-68, Andhra Pradesh (AP) in 1968-69, Maharashtra and Tripura in 1972-73, Gujarat in 1973-74, Uttar Pradesh (UP) in 1974-75 and Madhya Pradesh (MP) in 1979-80.[ii] In the rest of the states the acceleration in the growth rate was either not experienced at all or experienced much later than the nation as a whole. Among the 7 states experiencing growth acceleration earlier than the whole national economy, in terms of sequencing, the growth acceleration of the tertiary sector did not precede the growth acceleration of the whole state economy in any state[iii]. On the contrary, in all the 7 states the tertiary sector experienced acceleration only after (A.P., Bihar, Maharashtra, Tripura and UP) or at best simultaneously (Gujarat and MP) with the whole economy.

Table 2 : Estimates of Breakdates for State Economies in India

Sl. No.	States	Primary Sector	Secondary Sector	Tertiary Sector	Whole Economy
1	Andhra Pradesh	-	-	1972-73(+)	1968-69(+)
2	Arunachal Pradesh	1979-80(+)	-	-	-
3	Assam	-	1979-80 (+)	1979-80 (+)	1979-80(+)
4	Bihar	-	1980-81 (+)	1972-73(+)	1967-68(+)
5	Gujarat	1982-83 (-)	1975-76(+)	1973-74(+)	1973-74(+)
6	Haryana	-	1981-82(+)	-	-
7	Himachal Pradesh	-	-	1984-85(+)	1985-86(+)
8	Jammu and Kashmir	1985-86(-)	-	1973-74(-)	1985-86(-)
9	Karnataka	-	-	1975-76(+)	1985-86(+)
10	Kerala	-	1972-73(-)	1972-73(-)	1972-73(-)
11	Madhya Pradesh	-	1978-79(+)	1979-80(+)	1979-80(+)
12	Maharashtra	-	-	1984-85(+)	1972-73(+)
13	Manipur	1977-78(-)	1969-70(+)	1979-80(+)	1977-78(-)
14	Orissa	1965-66(-)	-	1970-71(-)	1967-68(-)
15	Punjab	-	1984-85(+)	1979-80(-)	-
16	Rajasthan	-	1982-83(+)	1974-75(+)	-
17	Tamil Nadu	-	1979-80(-)	1983-84(+)	-
18	Tripura	-	-	1975-76(+)	1972-73(+)
19	Uttar Pradesh	1973-74(+)	1974-75(+)	1976-77(+)	1974-75(+)
20	West Bengal	1982-83(+)	-	1972-73(+)	1982-83(+)
	All India	1979-80(+)	1981-82(+)	1982-83(+)	1981-82(+)

Notes : (1) (+) indicates acceleration and (-) indicates deceleration
(2) No adjustments have been made for weather or public administration
Source: Summarised from different tables in Dholakia (1994).

This finding is not surprising because prior to 1980-81, India was hardly integrated with the rest of the world and only the domestic demand would drive the economic activities. It is only the production of goods (primary and secondary sector) that can generate the demand for services and, therefore, the growth acceleration in the goods sector must precede the one in services. Even with severe limitations of data, consideration of regional aspects can significantly help us understand and interpret the growth story.

After 1980-81, the Indian economy started getting more and more integrated domestically and internationally. Rapidly growing export demand for the Indian goods and particularly services became the driving force for the economic activities in India. The analysis of determining endogenously the trend break dates by sector in different states for identifying regional sources of acceleration between phases 3 and 4 of Table 1 above would, therefore, hardly be relevant in terms of establishing primacy of sectoral activities to understand the growth story of the country. However, finding out the contribution of

different states in the observed acceleration in economic growth in the nation could be rewarding for pursuing economic reforms further in the lagging states. It can help to identify the major contributor states so as to emulate their policies by other states to the extent possible. Competitive politics among states, if properly regulated by the Centre, can result in further growth acceleration in the nation.

The second section of the present paper estimates the contribution of each state in the observed growth acceleration in the nation between the periods 1980-81 to 1991-92 and 1991-92 to 2003-04. It identifies the states and the sectors within states responsible for the observed acceleration in economic growth in the country. The third section considers all better-off states and worse-ff states as two regions to find out whether the two regions are economically integrated in the sense that growth in one causes the growth in the other and if so, how best to plan for the growth acceleration in the nation. The fourth section examines the plausibility and feasibility of the sectoral growth targets set for each state by the Planning Commission for the 11th Five Year Plan by examining the growth history of all the states for the last 25 years. The fifth and the final section concludes the discussion providing some policy recommendations.

II. Contribution of States in Growth Acceleration

The basic premise for doing such an exercise is that a nation is an aggregation of its regions. Thus, if we add the incomes of all states (regions), we should get the national income. This premise does not strictly hold in India given the problems in measurement and the data availability issues for some states and union territories. However, such problems are not considered serious in terms of magnitudes and are, therefore, ignored in India.

In order to derive the contribution of states in the national growth acceleration between two given time periods, it is necessary to estimate the growth rates of the states in the two time periods. This can be done for each sector and the economy as a whole. The relevant concept of income is the Gross State Domestic Product (GSDP) originating within the geographical boundary of the state and is measured at constant (1993-94) prices. The estimates of annualized growth rates based on continuous compounding are derived by fitting the following regression for each time period :

1. $\ln Y = a + b*t + u$

Where 'ln' stands for natural logarithm, Y for GSDP in the sector, t for years, u for random error term, a for the intercept parameter, and b for the growth rate parameter. Table 3 presents the estimates of the growth rate parameter (b) for the economy and 3 sectors in 20 states considered in this study for the two time periods, 1980-81 to 1991-92, and 1991-92 to 2003-04.

Table 3 reveals tremendous variation in the growth experience of the state economies in India over the 24 years considered in the present study. It indicates significant structural changes in the state economies and in the regional profile of the country. During the third phase (the eighties) of the growth story of the nation, the high growth states were Arunachal, Haryana, Maharasthra and Rajasthan, the rest being low growth states. All of these 4 high growth states of the eighties turned into low growth states during the fourth phase of the growth story of the nation (1991-92 to 2003-04). However, Goa, Gujarat, Himachal Pradesh, Karnataka, Meghalaya and West Bengal became high growth states from the low growth states during the same period. Similar stories can be found by considering the sectoral growth rates. It sharply comes out of the table that the smaller states like Arunachal Pradesh, Manipur, Meghayala, Himachal Pradesh and Goa (which are generally excluded from several regional studies in India!) are the ones experiencing very wide fluctuations in their sectoral growth rates. In short, the Indian growth story in its third and the fourth phases has considerable twists and turns for its regions. Since the major difference between the third and the fourth phases of growth in India is in terms of increased globalization and greater liberalization, these policy changes have significant differential impacts on composition and structure of regional growth in the country. The impact on the regional composition is captured by the relative shares of GSDP by the three broad sectors as presented in Table 4.

Table 3 : Estimates of Annualised Growth Rates of GSDP at Constant 1993-94 Prices by Primary, Secondary and Tertiary Sectors in States of India

States	Sectors	1980-81 to 1991-92		1991-92 to 2003-04		Difference in
		Growth (b) (in %)	T - Values	Growth (b) (in %)	T - Values	Growth Rates 7=(5)-(3)
1	2	3	4	5	6	7
1. Andhra Pradesh	P	2.44	3.48	3.45	7.39	+1.01
	S	7.42	16.75	6.03	20.55	-1.39
	T	7.23	21.89	6.92	39.45	-.31
	GSDP	5.27	11.16	5.62	31.01	+0.35
2. Arunachal Pradesh	P	8.05	12.39	(-)0.13*	-	-8.18
	S	7.69	9.84	4.42	3.72	-3.27
	T	9.15	18.91	7.94	22.84	-1.21
	GSDP	8.29	29.47	3.95	11.78	-4.34
3. Assam	P	4.41	1.99	0.79	5.43	-3.62
	S	3.58	8.86	2.31	7.21	-1.27
	T	4.90	18.56	4.76	16.47	-0.14
	GSDP	3.38	13.91	2.68	19.21	-0.70
4. Bihar + Jharkhand	P	2.72	4.08	2.99	5.10	+0.27
	S	6.00	11.31	5.02	5.48	-0.98
	T	5.42	26.64	5.65	19.57	+0.23
	GSDP	4.12	11.84	4.38	12.02	+0.26
5. Goa	P	0.84	1.87	1.55	3.99	+0.71
	S	2.89	1.83	11.04	12.16	+8.15
	T	6.35	17.96	7.60	14.45	+1.25
	GSDP	3.96	6.48	7.79	25.70	+3.83
6. Gujarat	P	1.10*	-	2.97*	-	+1.87
	S	6.71	12.24	8.13	12.02	+1.42
	T	5.98	24.97	7.89	50.61	+1.91
	GSDP	4.16	6.64	6.61	12.45	+2.45

States	Sectors	1980-81 to 1991-92 Growth (b) (in %)	T - Values	1991-92 to 2003-04 Growth (b) (in %)	T - Values	Difference in Growth Rates 7=(5)-(3)
7. Haryana	P	4.30	6.43	1.97	8.23	-2.33
	S	6.77	16.88	6.07	32.71	-0.70
	T	7.33	30.13	8.59	23.16	+1.26
	GSDP	5.82	17.09	5.51	30.43	-0.31
8. Himachal Pradesh	P	2.35	3.17	1.88	8.51	-0.47
	S	6.21	7.84	9.18	16.10	+2.97
	T	6.39	20.53	7.20	20.72	+0.81
	GSDP	4.73	10.09	6.35	62.12	+1.62
9. Karnataka	P	2.41	6.18	2.45	3.79	+0.04
	S	6.27	18.13	7.55	21.05	+1.28
	T	6.83	54.09	9.42	55.41	+2.59
	GSDP	4.91	21.57	6.89	35.09	+1.98
10. Kerala	P	0.51*	-	(-)0.44*	-	-0.95
	S	3.06	5.70	6.02	8.75	+2.96
	T	4.18	19.15	7.81	36.37	+3.63
	GSDP	2.70	5.89	5.38	22.50	+2.68
11. Madhya Pradesh + Chhattisgarh	P	1.00	2.05	1.84	2.61	+0.84
	S	5.03	6.46	6.11	13.75	+1.08
	T	5.76	37.61	5.51	28.03	-0.25
	GSDP	3.40	8.42	4.33	12.71	+1.03
12. Maharasthra	P	3.15	3.23	2.76	3.92	-0.39
	S	6.15	17.70	3.99	5.97	-2.16
	T	6.56	29.33	7.42	38.68	+0.86
	GSDP	5.65	16.41	5.54	16.39	-0.11
13. Manipur	P	2.13	7.83	2.86	8.44	+0.73
	S	(-)2.33*	-	6.25	6.16	+8.58
	T	6.07	40.05	6.44	20.87	+0.37
	GSDP	2.48	2.34	5.28	12.35	+2.80

States	Sectors	1980-81 to 1991-92 Growth (b) (in %)	T - Values	1991-92 to 2003-04 Growth (b) (in %)	T - Values	Difference in Growth Rates 7=(5)-(3)
14. Meghalaya	P	3.33	4.46	5.49	9.61	+2.16
	S	3.55	6.75	8.34	23.96	+4.79
	T	7.11	24.31	5.96	36.30	-1.15
	GSDP	5.15	12.11	6.14	20.91	+0.99
15. Orissa	P	2.00*	-	2.16	4.41	+0.16
	S	7.17	10.81	2.50	5.43	-4.67
	T	6.10	19.87	6.52	55.09	+0.42
	GSDP	3.80	6.93	3.96	15.77	+0.16
16. Punjab	P	4.74	19.52	2.17	11.92	-2.57
	S	6.30	26.48	5.58	17.11	-0.72
	T	3.84	30.82	6.60	30.87	+2.76
	GSDP	4.75	35.02	4.47	32.18	-0.28
17. Rajasthan	P	5.54	3.57	2.50	2.33	-3.04
	S	7.36	18.13	6.93	10.37	-0.43
	T	7.58	18.40	7.44	33.48	0.14
	GSDP	6.59	10.27	5.65	11.61	-0.94
18. Tamil Nadu	P	3.87	5.88	0.33*	-	-3.54
	S	4.25	10.25	4.79	8.78	+0.54
	T	6.30	24.53	7.95	34.13	+1.65
	GSDP	4.95	18.65	5.43	16.73	+0.48
19. Uttar Pradesh + Uttarakhand	P	2.57	10.91	2.30	9.88	-0.27
	S	6.74	22.30	4.30	10.43	-2.44
	T	5.66	26.30	4.45	34.83	-1.21
	GSDP	4.51	22.61	3.61	19.72	-0.90
20. West Bengal	P	5.05	10.32	3.84	14.79	-1.21
	S	3.91	16.78	5.74	36.24	+1.83
	T	4.71	47.26	8.91	46.94	+4.20
	GSDP	4.62	26.56	6.69	88.17	+2.07

States	Sectors	1980-81 to 1991-92 Growth (b) (in %)	T - Values	1991-92 to 2003-04 Growth (b) (in %)	T - Values	Difference in Growth Rates 7=(5)-(3)
21. Total of 20 States	P	2.75	7.71	2.35	8.88	-0.40
	S	5.80	25.47	5.56	15.79	-0.24
	T	5.98	49.97	7.15	95.43	+1.17
	GSDP	4.69	22.23	5.30	38.35	+0.61
22. Nation	P	3.28	11.24	2.72	11.47	-0.56
	S	6.42	30.76	6.18	25.21	-0.24
	T	6.58	70.45	7.77	81.04	+1.19
	GSDP	5.29	32.95	5.91	65.32	+0.62

Note (1) *Represent CAGR based on three year average at the end points since the growth rate parameter in the semi-log regression is not significant even at 10% level. The rest of the growth rates reported here are statistically significant at least @ 10% level, with most of them being significant @ 1% level.

(2) P = Primary Sector, S = Secondary Sector, T = Tertiary Sector

Source : Basic data on GSDP from CSO website

Table 4: - Average Relative Shares of all States in GSDP by Broad Sectors (in %)								
	Primary	**Secondary**	**Tertiary**	**GSDP**	**Primary**	**Secondary**	**Tertiary**	**GSDP**
	1980-81 to 1991-93				**1991-92 to 2003-05**			
1. Andhra Pradesh	8.45	6.16	8.34	7.87	8.62	7.02	8.59	8.16
2. Arunachal Pradesh	0.12	0.08	0.07	0.09	0.14	0.10	0.10	0.11
3. Assam	3.25	1.53	2.14	2.42	2.76	1.09	1.82	1.91
4. Bihar + Jharkhand	9.20	4.92	5.68	6.86	7.65	3.95	4.68	5.37
5. Goa	0.22	0.37	0.41	0.33	0.20	0.47	0.44	0.38
6. Gujarat	6.25	8.32	6.80	6.98	6.02	10.66	6.98	7.69
7. Harayana	3.63	3.45	2.45	3.15	3.85	3.29	2.65	3.19
8. H.P	0.71	0.63	0.70	0.69	0.64	0.88	0.67	0.72
9. Karanataka	5.85	5.68	5.34	5.62	6.15	6.27	6.19	6.21
10. Kerala	3.45	2.87	4.90	3.84	3.09	2.87	4.57	3.68
11. Madhya Pradesh + Chhattisgarh	9.12	6.70	6.63	7.63	8.47	6.79	5.92	6.92
12. Maharashtra	8.07	19.00	15.98	13.65	9.13	18.78	18.31	15.66
13. Manipur	0.20	0.36	0.21	0.24	0.19	0.15	0.20	0.18
14. Meghalaya	0.23	0.11	0.28	0.22	0.25	0.12	0.28	0.22
15. Orrissa	4.03	2.18	2.31	2.95	3.31	1.82	2.25	2.45
16. Punjab	5.35	3.42	3.71	4.26	5.70	3.48	3.25	4.05
17. Rajasthan	5.09	4.11	4.42	4.60	5.88	5.01	4.72	5.15
18. Tamil Nadu	5.15	11.66	8.19	7.85	5.48	10.39	8.95	8.30
19. Uttar Pradesh + Uttarakhand	14.95	10.95	12.81	13.19	14.41	10.12	10.70	11.63
20. West Bengal	6.68	7.49	8.62	7.57	8.08	6.74	8.74	8.01
Total of 20 States	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**

Source : Same as Table 3 above.

Tables 3 and 4 together provide the base for estimating a state's contribution to the growth acceleration (or deceleration) observed in the national average from the period 1980-81 to 1991-92 and 1991-92 to 2003-04.[iv] These estimated contributions of each state in the national growth acceleration (or deceleration) in the primary, secondary and tertiary sectors along with the whole economy are presented in Table 5.

Table 5: - States' Contribution to Growth Acceleration by Sectors

States	Primary	Secondary	Tertiary	GSDP
	R1*G1 - R0*G0 (in % points)			
1. Andhra Pradesh	0.0914	- 0.0340	- 0.0090	0.0443
2. Arunachal Pradesh	- 0.0098	- 0.0017	0.0013	- 0.0031
3. Assam	- 0.1214	- 0.0297	- 0.0180	- 0.0306
4. Bihar + Jharkhand	- 0.0217	- 0.0968	- 0.0431	- 0.0474
5. Goa	0.0012	0.0414	0.0075	0.0164
6. Gujarat	0.1102	0.3085	0.1441	0.2178
7. Harayana	- 0.0805	- 0.0343	0.0480	- 0.0077
8. Himachal Pradesh	- 0.0046	0.0415	0.0040	0.0132
9. Karanataka	0.0096	0.1175	0.2179	0.1518
10. Kerala	- 0.0312	0.0851	0.1517	0.0944
11. Madhya Pradesh + Chhattisgarh	0.0646	0.0779	- 0.0560	0.0402
12. Maharashtra	- 0.0024	- 0.4195	0.3103	0.0963
13. Manipur	0.0011	0.0175	0.0001	0.0036
14. Meghalaya	0.0059	0.0062	- 0.0035	0.0025
15. Orrissa	- 0.0092	- 0.1109	0.0059	- 0.0150
16. Punjab	- 0.1298	- 0.0216	0.0718	- 0.0215
17. Rajasthan	- 0.1352	0.0453	0.0164	- 0.0123
18. Tamil Nadu	- 0.1813	0.0020	0.1951	0.0625
19. Uttar Pradesh + Uttarakhand	- 0.0526	- 0.3029	- 0.2490	- 0.1749
20. West Bengal	- 0.0272	0.0943	0.3731	0.1862
Total of 20 States	**- 0.5230**	**- 0.2142**	**1.1684**	**0.6168**
National GDP	**- 0.56**	**- 0.24**	**1.19**	**0.62**

Source : Tables 3 and 4 above.

The table clearly brings out the major regional sources of acceleration in the national economy during phase 3 and 4 of its growth story. Phase 3 (1980-81 to 1991-92) was a period of decontrol and deregulation, whereas Phase 4 (1991-92 to 2003-04) was a period of liberalization and globalization. Gujarat emerged as a clear winner during this phase with highest contribution to the national growth acceleration. Almost one-third of the national growth acceleration during this period was accounted for by Gujarat alone. West Bengal and Karnataka were respectively the second and the third largest contributors to the national growth acceleration. Kerala, Maharashtra and Tamil Nadu also contributed substantially to the growth acceleration. However, out of these high performer 6 states, only Gujarat and Karnataka performed consistently in all the three sectors. West Bengal

and Kerala performed in the secondary and tertiary sectors, while Maharashtra and Tamil Nadu performed only in the tertiary sector. The smaller states doing well in all the three sectors and positively contributing to national growth acceleration were Goa and Manipur.

On the other hand, UP (including Uttarakhand) was the major laggard contributing negatively to growth acceleration in all the three sectors. Bihar and Assam also contributed negatively to the national growth acceleration in all the three sectors. Actually, the national growth in the primary sector and the secondary sector registered a deceleration over the two phases largely because most of the states experienced deceleration in these two sectors. During the fourth phase, the growth acceleration in the nation is mainly contributed by the better off states. The worse off states except West Bengal have not contributed substantially to the growth acceleration in the nation during the phase of liberalization and globalization.

In agriculture, only Gujarat, Andhra Pradesh and Madhya Pradesh (including Chhattisgarh) had substantial positive contribution. On the other hand, Tamil Nadu, Rajasthan, Punjab, Haryana and UP experienced a substantial deceleration. Thus, the agriculture in the nation suffered because the traditional agricultural areas of the nation performed poorly, while the shift to more commercialized agriculture in states like Gujarat, Andhra Pradesh and Madhya Pradesh was not sufficient to compensate.

In the secondary sector, Maharashtra, Uttar Pradesh, Orissa and Bihar had substantial negative contribution to the growth acceleration, and overwhelmed a substantial positive contribution from Gujarat, Karnataka, West Bengal and Kerala. Thus, the industries also got differentially impacted during the liberalization and globalization as expected. The traditional industries with considerable participation of public sector and enjoying large degree of protection experienced relative decline and modern industries with larger private sector participation grew fast in the liberalized and globalized era. The state governments' policies and state level reforms also played an important role in the growth performance of states particularly in attracting industrial investments.

In tertiary sector, most of the states performed well and contributed positively to the acceleration of growth in the nation. The major laggards in this sector were Uttar Pradesh

and Madhya Pradesh. Surprisingly, it is West Bengal and Maharashtra which have contributed substantially to the growth acceleration in this sector, even more than the traditionally hailed leaders in services like Karnataka, Tamil Nadu and Kerala.

III. Causality for Growth Among Regions

Consideration of regional dimension in India generally stems from the concerns about disparity and inequality among states and regions in the levels of development. However, another equally important angle would be of efficiency. When growth or development in an economy is considered in terms of geography, regional disparity or inequality, particularly in income originating, is inevitable, because growth impulses are invariably location-specific (see, Myrdal, 1957 and Hirschman, 1959). The question of interest would then be whether it leads to further polarization and concentration of economic activities by attracting the resources from the peripheri or leads to spread of economic activities and trickle down of economic opportunities to the peripheri. While one can theorize and argue about the likely dominance of one over the other of these effects, it is better to examine the empirical evidence in this regard.

The popular empirical evidence often cited for the regional polarization implying continuance or increasing inequality and disparity in development levels of states over time is to consider the weighted or un-weighted coefficient of variation of per capita GSDP originating within the geographical boundaries of the states. Another (and perhaps more sophisticated) measure is the Gini coefficient of inequality.

Table 6 : Trends in Interstate Inequality, 1980-81 to 2006-07

Year	Gini Coefficient	Year	Gini Coefficient	Year	Gini Coefficient
1	2	1	2	1	2
1980-81	0.115	1989-90	0.133	1998-99	0.159
1981-82	0.121	1990-91	0.166	1999-00	0.164
1982-83	0.113	1991-92	0.134	2000-01	0.164
1983-84	0.113	1992-93	0.148	2001-02	0.207
1984-85	0.112	1993-94	0.151	2002-03	0.204
1985-86	0.114	1994-95	0.158	2003-04	0.209
1986-87	0.111	1995-96	0.174	2004-05	0.205
1987-88	0.122	1996-97	0.164	2005-06	0.208
1988-89	0.119	1997-98	0.160	2006-07	0.206

Note : Gini Coefficients here are calculated on the basis of 14 major states in India
Source: Centre for Monitoring Indian Economy for the basic data.

Table 6 presents the Gini Coefficient of inequality in the country among states since 1980-81. The table shows that the regional inequality has risen over time in India. The traditional conclusion would, therefore, be that Indian regional data supports the polarization hypothesis against the spread effect of regional growth. However, such crude tests based on inequality measures should not be used to verify hypotheses that essentially describe processes and casual effects. There is a need to test these hypotheses directly by considering two regions, a better-off region (B) consisting of all better off states and a worse off region (W) consisting of the rest of the states in the country; and then carrying out the Granger causality test for the level of the income and the rate of change in the income in the two regions.

The hypothesis of the spread and trickling down effects would hold if the income and growth of the better-off region Granger-causes the income and growth of the worse-off region with positive coefficients. The same direction of causality with negative coefficient would support the polarization and concentration hypothesis. However, if the causality is found from the worse-off region to the better-off region, or if there is bi-directional causality, then the empirical evidence may be considered inconclusive about these hypotheses.

The exercise carried out here considers data on GSDP at constant (1999-2000) prices from all states for the period 1980-81 to 2006-07 after making necessary adjustments for base year changes. Among the better-off states (B), Andhra Pradesh, Goa, Gujarat, Haryana, Karnataka, Kerala, Maharashtra, Punjab and Tamil Nadu are included. The rest are included among worse-off states (W). The GSDP of these two categories, B and W are derived by adding the GSDP of states belonging to the respective groups.

The Granger-Causality test is performed by VAR modeling where the selection of lags is done through Akaike Information Criterion (AIC) because the Wald Test is sensitive to the lag selection. Table 7 presents the results of the Granger-Causality test.

Table 7 : Granger-Causality – Results of VAR Model and Wald Test

Dependent Variable	Independent Variable	Parameter Estimate	Standard Error	P-Value	Wald Test
1	2	3	4	5	6
I. On GSDP levels with lag = 2 based on minimum AIC					
1. GSDP-B	Constant	-63493	45120	0.1747	Chi-Square = 2.07 with
	GSDP-B(t-1)	1.378	0.284	0.0001	2 degrees of freedom
	GSDP-W(t-1)	0.067	0.379	0.8621	and significant only at
	GSDP-B(t-2)	-0.692	0.311	0.0378	35.47% level
	GSDP-W(t-2)	0.470	0.382	0.2321	
2. GSDP-W	Constant	33967	34702	0.3394	Chi-square = 8.02 with
	GSDP-B(t-1)	0.618	0.218	0.0103	DF=2 and significant @
	GSDP-W(t-1)	0.185	0.291	0.5318	1.81% level
	GSDP-B(t-2)	-0.380	0.239	0.1283	
	GSDP-W(t-2)	0.519	0.294	0.0926	
II. On Δ GSDP with lag=1 based on minimum AIC					
1. Δ GSDP-B	Constant	9687	6903	0.1745	Chi-Square = 0.16 with
	Δ GSDP-B(t-1)	0.928	0.242	0.0009	DF=1 and significant @
	Δ GSDP-W(t-1)	-0.147	0.365	0.6920	68.81% level
2. Δ GSDP-W	Constant	13507	5158	0.0157	Chi-Square = 20.29 with
	Δ GSDP-B(t-1)	0.815	0.181	0.0002	DF=1 and significant @
	Δ GSDP-W(t-1)	-0.631	0.273	0.0305	0.01% level

Note : Both the tests are consistent in their conclusions.

The table clearly shows that both the VAR model and the Wald test for Granger-Causality confirm only uni-directional causality of level as well as rate of change in GSDP from B-group of states to W-group of states. Moreover, the coefficients in both the cases are positive indicating that an increase in the level (and the rate of change) of GSDP of the better-off states would lead to (or cause) an increase in the level (and the rate of change) of GSDP of the worse-off states in India. Thus, the Indian regional data over the last 27 years clearly support the hypothesis of spread and trickle down effect rather than the backwash or polarization effect. This is an important finding for the Planning Commission and the Finance Commissions whose main concerns so far have been regional disparities and inequalities while allocating and devolving resources among states.

Economic growth in better-off states does spur growth in the worse-off states not only through temporary migration of labour and capital but also through the forward and backward linkages of economic activities. The more integrated is the national economy geographically, the higher are the benefits of the spread and the trickle down effect of the leading regions to the lagging regions. Since increased globalization has reduced constraints on effective demand and thereby on extent of specialization in the regional economies, it has paved the way for increased spread and trickle down effects through greater regional integration in the domestic economy. The backwash and polarization effects become relevant more in an overall static framework where the size of the cake for sharing among regions remains more or less constant. Increased globalization, on the contrary, has enabled rapid expansion of production possibility frontier not only through reduced barriers to trade enabling greater flow of goods and services across borders, but also through increased factor mobility across nations. Rapid liberalistaion of domestic economic policies to ensure fuller economic integration of all state economies could be the most effective alternative to achieve further efficiency and acceleration in the growth rate. Concerns about regional equity and disparities in a domestically such a well integrated economy operating in an increasingly globalised environment need not distract the efforts particularly in the light of the empirical findings of the present section.

IV. Plausibility of Regional Growth Targets

In recognition of the regional aspects of growth and competitive politics, the planning commission has started decomposing its national growth target for the Five Year Plan for each state and bigger Union Territory since the tenth plan. It further provides the growth targets for each region by the three broad sectors termed as agriculture, industry and services broadly corresponding to the standard classification of Primary, Secondary and Tertiary sectors. The eleventh plan (2007-08 to 2011-12) has provided the regional growth targets ranging from 5.4% pa to 13.5% pa if Union Territories are included and 5.9% to 12.1% pa if only states are considered. This is indeed a substantial variation in comparison to the national growth target of 9% p.a. However, the Planning Commission (2007) has not provided any reasons, justifications or indications of expected changes in economic policies in the respective states for achieving those targets.

Before setting those targets, the Planning Commission (2007) has considered statewise sectoral growth performance in the 10th Five Year Plan during the three years from 2001-02 to 2004-05. However, those results and the targets have hardly any relationship. The regional growth target setting seems to be an ad hoc arithmetic exercise. It is important to check the plausibility and feasibility of those targets by considering the best performance of states during the past two decades. The best performance is identified as the highest growth rate clocked during any five consecutive years in the state over the period 1980-81 to 2003-04. Such maximum achieved growth rates by sectors for each state are presented in Table 8 along with the 11th plan targets set by the Planning Commission (2007).

Table 8 : Maximum Growth Rates* for Five Consecutive Years during 1980-2004 in states and Growth Targets of 11th Plan in India

(in %)

States	Maximum Growth for 5 consecutive Years					11th Plan Targets			
	Primary	Secondary	Tertiary	GSDP	Average @	Agriculture	Industry	Service	Total
1	2	3	4	5	6	7	8	9	10
1.Andhra Pradesh	6.49	11.01	9.83	9.07	9.42	4.0	12.0	10.4	9.5
2.Arunachal Pradesh	12.67	16.95	12.88	10.48	13.82	2.8	8.0	7.2	6.4
3.Assam	4.89	5.62	7.55	5.13	6.26	2.0	8.0	8.0	6.5
4.Bihar+	7.58	10.10	8.58	7.46	8.50	7.0	8.0	8.0	7.6
Jharkhand						6.3	12.0	8.0	9.8
5.Goa	4.19	17.30	12.07	10.41	14.54	7.7	15.7	9.0	12.1
6.Gujarat	18.37	15.61	9.14	12.39	13.62	5.5	14.0	10.5	11.2
7.Haryana	9.08	9.45	10.85	8.17	9.98	5.3	14.0	12.0	11.0
8.Himachal Pradesh	7.53	14.36	10.65	8.74	11.33	3.0	14.5	7.5	9.5
9.Karnataka	6.79	11.39	10.76	8.77	10.14	5.4	12.5	12.0	11.2
10.Kerala	6.20	10.70	10.14	6.68	10.37	0.3	9.0	11.0	9.5
11.Madhya Pradesh+	5.19	10.36	7.36	6.59	7.43	4.14	8.0	7.0	6.7
Chhattisgarh						1.17	12.0	8.0	8.6
12.Maharastra	10.89	8.71	10.03	8.98	9.76	4.4	8.0	10.2	9.1
13.Manipur	4.81	17.23	9.53	8.13	10.27	1.2	8.0	7.0	5.9
14.Meghalaya	7.89	10.43	8.81	8.35	9.58	4.7	8.0	7.9	7.3
15.Orissa	6.05	10.95	8.30	5.10	7.92	3.0	12.0	9.6	8.8
16.Punjab	6.41	8.02	8.50	5.98	7.81	2.4	8.0	7.4	5.9
17.Rajasthan	15.12	10.86	10.21	10.63	12.76	3.5	8.0	8.9	7.4
18.Tamil Nadu	7.42	8.38	10.16	7.54	9.25	4.7	8.0	9.4	8.5
19.Uttar Pradesh+	3.93	8.41	7.17	6.01	6.37	3.0	8.0	7.1	6.1
Uttarakhand						3.0	12.0	11.0	9.9
20.West Bengal	8.15	7.48	10.42	7.17	9.26	4.0	11.0	11.0	9.7

* These growth rates are CAGR in GSDP by sectors at constant 1993-94 prices.

@ This represents weighted average growth rate based on maximum sectoral growth rates with the weightage of sectoral GSDP in the year 2003-04.

Source : Planning Commission (2007) for Cols.7 to 10; and author's calculations for cols. 2 to 6.

Several interesting points emerge from Table 8. First of all, considering the best performance of states during the last two decades, only Andhra Pradesh, Arunachal Pradesh, Goa, Gujarat and Rajasthan have grown at a rate higher than 9% p.a. for five consecutive years. The rest of the states have never experienced such a high growth rate for five consecutive years so far. On the other hand, the 11th Plan has assigned a target of growth rate higher than 9% p.a. to Haryana, Himachal Pradesh, Karnataka, Kerala, Maharashtra, and West Bengal besides Andhra Pradesh, Goa and Gujarat. Moreover, out of all these 9 states, only Gujarat is assigned a target that it has achieved in the past. The remaining 8 states have been assigned the growth target that they have not achieved so far.

In order to derive the upper limit of plausible growth performance in states, the maximum growth rates clocked during any five consecutive years in the three sectors can be considered with the weightage given by the sectoral shares in GSDP in the terminal year 2003-04. Such a growth rate for each state is presented in col.6 of Table 8. This is certainly the most optimistic growth rate for a state when all best conditions experienced in the past in each of its sectors obtain simultaneously during the same five year period. Compared to this most optimistic growth rate, the target set by the Planning Commission (2007) is higher in 8 states out of the 20 states considered in Table 8. This raises serious doubts about the feasibility of the regional growth targets set by the Planning Commission (2007) particularly because it has not given any justification or any indication on the direction of efforts and changes in economic policies required in the respective states. In this context, it is surprising to find that the targets set for the agricultural sector is consistently less than the best performance already achieved during any five consecutive years in the case of every state without exception. In the industrial and service sectors, however, the targets often are more ambitious than the best performance in the past would suggest.

It is interesting to note that the national growth target is set at 9% p.a. for the 11th Plan implying a considerable acceleration in the growth rate during the plan period, and that the 9 states identified earlier are considered the major regional sources for such an acceleration. All these states except Himachal Pradesh and West Bengal belong to the category of the better off states. It appears that the Planning Commission has implicitly accepted the arguments in favour of efficiency over the equity. However, the evidence on

the direction of causality provided in the present study implies that the Planning Commission has not given up the concerns on regional equity, but has reposed its faith on the spread and trickle down effects to address regional disparities over time. This, however, implies some important policy changes both at the central and the state levels.

V. Summary and Policy Implications

The present study finds that Gujarat, West Bengal, Karnataka, Maharashtra, Kerala and Tamil Nadu are the major contributors to the observed growth acceleration of 0.62 percentage points in India after 1991-92. All of them except West Bengal are better off states having higher per capita GSDP than the national average. This would lead to increase in the regional disparity or inequality index for the time being. However, the causality test provides support to the hypothesis about the spread and trickle down effects working among Indian regions. These effects will be stronger and felt faster if the domestic economy is very well integrated and interlinked with free flow of goods, services and factors of production. The regional growth targets assigned by the 11th Plan in India, although highly ambitious for most of the states, seem to rely on the spread and trickle down effects of economic growth acceleration taking place in the better off states to address the problems of regional disparity and inequality. The Planning Commission has identified almost all better off states to deliver the required growth acceleration in the national growth rate. It is a welcome change in the approach of the Planning Commission not to sacrifice efficiency for the immediate equity concerns, but to take a long term view where the two are the complementary objectives as the findings of the present study indicate.

In order to achieve such a complementarity between the growth and equity objectives in the long run, it is necessary to implement several policy changes at an early date. It is important for the national policy makers to provide economically and geographically well integrated national markets for all goods and services. This can be done by removing or at least reducing significantly all barriers to the physical movement of goods and services across states. If there are any artificial controls or regulations on such movements, they need to be immediately removed. It will open up the regional markets and production sector to inter-regional competition by reducing all artificial protections under whatever garbs or excuses. Thus, there is a need to equalize all rates of commodity taxation across states. The move to introduce a uniform goods and service tax across states is a welcome

step in this context. The direct fiscal incentives given to industries and businesses to any given locations similarly need to be abolished. The incentives can be in terms of provision of better infrastructural facilities and not tax holidays.

Simultaneously, the national policy makers need to worry about integrating all state economies effectively for free movements of the factors of production. Free mobility has two dimensions – legal and economic. Most of the factors (though not all) are legally allowed to move across states in India, but there are significant costs attached to such movements because of linguistic, social and imperfect informational reasons. Aggressive pursuit of schooling drive, provision of relevant information, spreading electronic networks and communication channels to cover all the geography and compelling states to provide satisfactory healthcare and to use common language on public places would go a long way to reduce barriers to mobility of factors of production. Moreover, wherever restrictions on transfer of ownership rights on property including land exist, they need to be relaxed for the better flow of factors of production across states.

Finally, the state governments should consider seriously the challenge of achieving the growth targets assigned to them by the Planning Commission. An economy restricting private initiative and relying exclusively on the public sector usually does not grow rapidly. This has been the case in several states. There is a need to liberalise laws to allow private initiative particularly in those fields where private participation has not been encouraged hitherto like primary education, primary healthcare, sanitation, power supply, surface irrigation, forestry, mining, etc. The success stories of public-private partnerships implemented in different states need to be replicated soon. Similarly, the state bureaucracies need to be friendly to business and industry so as to expedite approval processes. This may require significant administrative reforms at the state level. Most importantly, the states need to consider seriously liberalizing the land and labour markets by appropriately changing laws and policies. In this regard, the experience of the forward looking performing states would come handy.

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[i] It is too early to detect another expected break point in the year 2003-04 as was argued by the Finance Minister in his budget speech of February 29, 2008. But a consistent and considerably high growth performance during 2003-04 onwards is likely to lead to another trend break and further acceleration in economic growth in India when sufficient data points are available in future. During 2003-04 to 2008-09, the average real growth rate clocked is 8.5 percent p.a., however, the state income data are not available beyond 2006-07 as of now.

[ii] Punjab and Haryana got separated from the old Punjab State in 1966 and their data series, therefore, started only from 1965-66 onwards. As a result, it was not possible to identify the trend-break year for them if it occurred around late or mid-sixties, which is most likely to be the case since it is well known that Indian agriculture turned around in the mid-sixties largely on account of developments of irrigation and high yielding varieties of seeds in Punjab and Haryana.

[iii] Even if we include Punjab and Haryana among the states experiencing acceleration earlier than the nation, the argument in the text remains valid, because agriculture was the sector in these states to turn around first.

[iv] The difference in the national average growth rates during the two periods is represented as $(GN_1-GN_0) = \Sigma Ri_1*Gi_1 - \Sigma Ri_0 * Gi_0$ where Ri is the relative share of region i and Gi is the growth rate in region i. Subscripts 0 and 1 represent the two time periods, 1980-81 to 1991-92 and 1991-92 to 2003-04 respectively. Then, $(GN_1 - GN_0) = \Sigma [Ri_1 (Gi_1 - Gi0) + Gi_o (Ri_1 - Ri_0)]$, where the bracketed term represents contribution of the i^{th} region.