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GROWTH DYNAMICS OF TAMIL NADU ECONOMY

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K R Shanmugam

INTRODUCTION

Tamil Nadu is one of the most progressive states in the country. It ranks first in credit deposit ratio, second in (largest) size of economy, third in industrial development and competitiveness index (and manufacturing competitiveness index), and fourth in terms of per capita income¹ among the major Indian states. Tamil Nadu has also done well in terms of human development indicators.²

Tamil Nadu is one of the industrialized states in the county. It ranks first in number of factories and third in industrial output.³ While Tamil Nadu's growth is driven by services, industry is the second dominant sector, accounting for about 30 percent of total GSDP of the state. It is a leading manufacturer in automobiles, textiles, hosiery, pharma, leather, IT and ITES.

Tamil Nadu economy has been one of the fastest growing states in the country. During 2005-06 to 2014-15, the real growth of Tamil Nadu economy was 9.2 percent per annum as against the All-India average rate of growth of 7.7 percent. Its GSDP has come mainly from services, which grow at about 10 percent per annum. Tamil Nadu has the potential to record a double-digit growth. The Vision Tamil Nadu 2023 document sets 11 percent growth target for the Tamil Nadu economy. The Twelfth Plan also sets 11 percent growth target.

Tamil Nadu Government has also managed its finances in a fiscally prudent manner. Its revenue deficit, fiscal deficit and debt are kept within the norms prescribed in its FRBM act. Despite all these developments and achievements, the GSDP growth in Tamil Nadu came down to 3.4 percent in 2012-13 (while the All India growth was 4.5 percent). At the same time, poor states like Madhya Pradesh, Bihar, and Jharkhand registered almost double-digit growth.

There could be various reasons for slow pace of growth of Tamil Nadu economy in recent years. Some of them include:

- Increased share of the non agriculture sectors which are vulnerable to global shock;

¹ Next only to Maharashtra, Haryana and Gujarat.

² It ranks second in low birth rate, third in terms of literacy rate and female literacy in 2011 and third in infant mortality rate. It also ranks fourth in life expectancy at birth.

³ Industry comprises (i) mining and quarrying, (ii) manufacturing, (iii) construction and (iv) electricity, gas and water supply.

- Rapid urbanization and increasing proportion of urban poor that create pressure on urban amenities like housing, water supply, sanitation, solid waste management etc.;
- Tamil Nadu is a power deficit state; and
- Its agriculture growth depends on monsoon.

While evidences indicate a very low level of growth of Tamil Nadu during the recession years in the past, the state had successfully emerged out of the recession years and potential to register a double-digit growth in the medium term. However, the slow pace of growth in the recession years led to uncertainty and raised doubt in meeting the Twelfth Plan objective of "Accelerating, Innovative and Inclusive Growth". Therefore, there is a need to understand the growth dynamics of the state and identify the sectors and regions causing the sudden fall in the overall growth rate during the recession years. Specifically, it is essential to understand:

- (i) Structure and composition of GSDP,
- (ii) Spatial and economic concentrations,
- (iii) The driving forces of per capita GSDP growth,
- (iv) The short term constraints of growth and challenges facing the economy, and
- (v) Opportunities available for the state to grow faster.

This information will be useful to the policy maker and other analyst to make appropriate strategies to overcome the bottlenecks and make the state to register its potential level of growth, and achieve its Twelfth Plan VISION of "Accelerated, Innovative and Inclusive Growth".

Objectives of the Study

The main aim of this study is to analyze the growth dynamics of Tamil Nadu economy. The specific objectives of this study are follows:

- To analyze the Tamil Nadu's growth experience in terms of (a) sectoral growth, (b) relative contribution of sectoral growth to overall growth, and (c) changes in sectoral composition of GSDP;
- To analyze the spatial aspects of growth in terms of (a) inter district growth; (b) relative contribution of regional (districts) growth to overall growth; and (c) regional share in total GSDP of the state;
- To rank districts based on their economic performance;
- To identify the factors determining the per capita income growth in Tamil Nadu;

- To analyze the convergence of per capita income growth among the Tamil Nadu districts;
- To study the challenges facing Tamil Nadu economy and find out possible remedies; and
- To analyze the opportunities available for Tamil Nadu to make high growth.

It is noted that this study mainly focuses on the sectoral and regional dimension of growth of Tamil Nadu economy and not on all other aspects of growth. It therefore excludes the in-depth the discussion on the role of fiscal policy, resource availability, proper utilization of existing resources, role of human resources etc. in the growth process or dynamics of the state.

Plan of the Report

Chapter 2 assesses the growth performance of Tamil Nadu economy in the long-term, medium term and short term and compares the growth performance of Tamil Nadu state with that of other major states in the country. Chapter 3 reviews the sectoral growth pattern and contributions of various sectors to the overall GSDP growth and identifies the sub sectors responsible for slow pace of growth of Tamil Nadu economy during the recession years. Chapter 4 analyses the regional growth pattern and identifies the regions with slow pace of growth, hindering the overall growth of the state. Chapter 5 deals with determinants of economic growth and convergence analysis and the final Chapter 6 discusses about the challenges facing Tamil Nadu economy and the possible remedies for achieving high growth.

Chapter 2

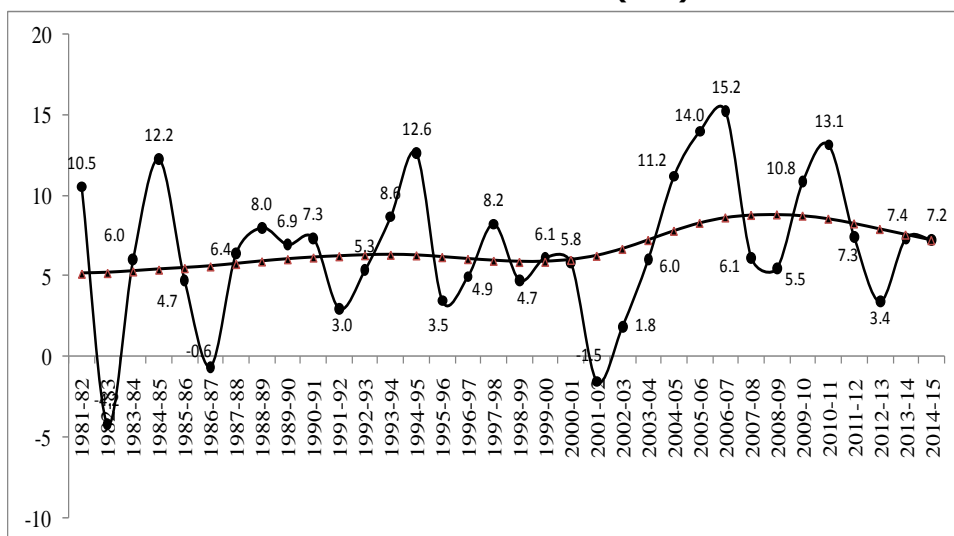
PERFORMANCE OF TAMIL NADU ECONOMY

Long-term Growth Performance

The long-term average (actual) growth of Tamil Nadu economy at constant prices was 6.69 percent during 1981-82 to 2014-15 as against the all India average growth of 6.28 percent (Charts 2.1 and 2.2).⁴ While both Tamil Nadu economy (5.49 percent) and Indian economy (5.58 percent) recorded almost the equivalent (average) rate from 1981-82 to 2003-04, Tamil Nadu economy started growing faster since 2004-05 and as a result, its long-term average growth improved to 6.69 percent level. Its average annual rate of growth during 2004-05 to 2014-15 (9.2 percent) was about 1.5 percentage points higher than the all India growth of 7.72 percent.

While Tamil Nadu's trend (potential) growth rate was higher than that of all India up to 1995-96, both India's and Tamil Nadu's long term trend growths reached 6.05 percent level in 1996-97. Until 2002-03, India's trend growth was higher than Tamil Nadu's trend growth, after that year Tamil Nadu's trend rate was kept higher than all India's rate. Between 2005-06 and 2011-12, Tamil Nadu's long-term average trend rate ranged between 8.24 percent and 8.79 percent, which is about 1 percentage, point higher than all India rate.

Chart 1: Trend and Actual Growth Rates of GSDP (real) in Tamil Nadu

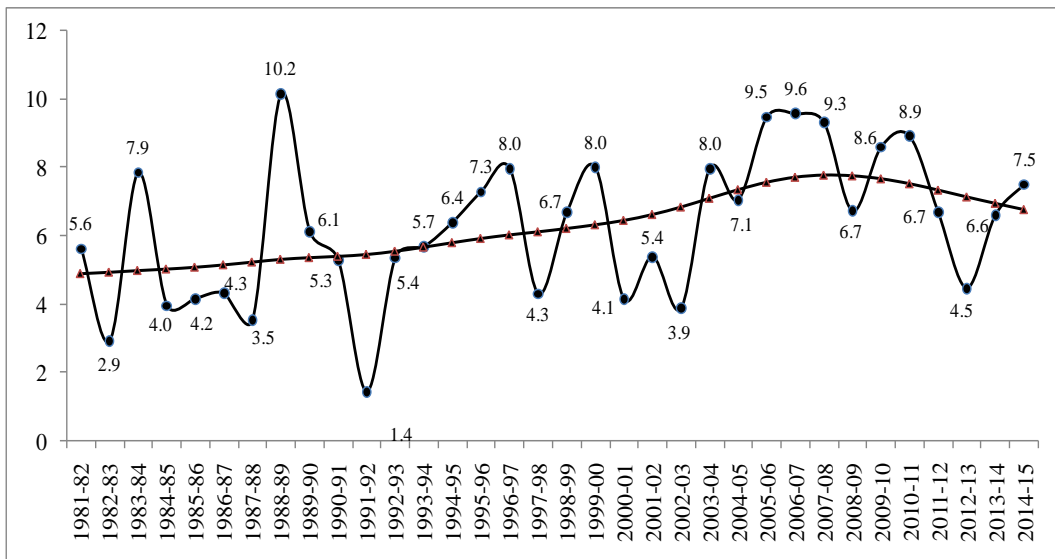


⁴ Chart 1 shows the estimated (using HP Filter) trend and actual growth rates of GSDP of Tamil Nadu at constant prices since eighties. Up to 2004-05, the 1999-00 (base series) prices and after that 2004-05 prices series are used. In Chart 2, 2004-05 prices series for all India GDP at factor cost is used until 2012-13 and then 2011-12 prices (new) series are used.

The performance of Tamil Nadu economy during the last two years (3.4 percent in 2012-13 and 7.2 percent in 2013-14) has been disappointing, given its higher growth potential. The average growth during this period was just 5.3 percent. The last time Tamil Nadu has gone through a slow down in the GSDP growth was in the early years of the current century (last decade). At that time, the three years average GSDP (real) growth for 2000-2003 was about 2 percent, which was about 4 percentage points below the trend growth rate. The GSDP growth rate for 2012-13 (3.4 percent) was about 10 percentage points less than the preceding peak growth rate of 13.1 percent in 2010-11 (and 11.8 percentage points less than the highest growth since 1980-81 of 15.2 percent in 2006-07).

The quick estimates for 2014-15 place the GSDP growth of Tamil Nadu at 7.25 percent, which is about 6 percentage points less than the preceding peak growth of 13.1 percent in 2010-11. This difference will, however, decrease if the growth rate is revised upwards (the change in base year will also obviously increase the growth marginally). It is however noticed that the slow down since 2011-12 brought down the potential rate from 8.53 percent in 2010-11 to 7.21 percent in 2014-15 (Chart 1).

Chart 2: Trend and Actual Growth Rates of GDP (2004-05 base series)



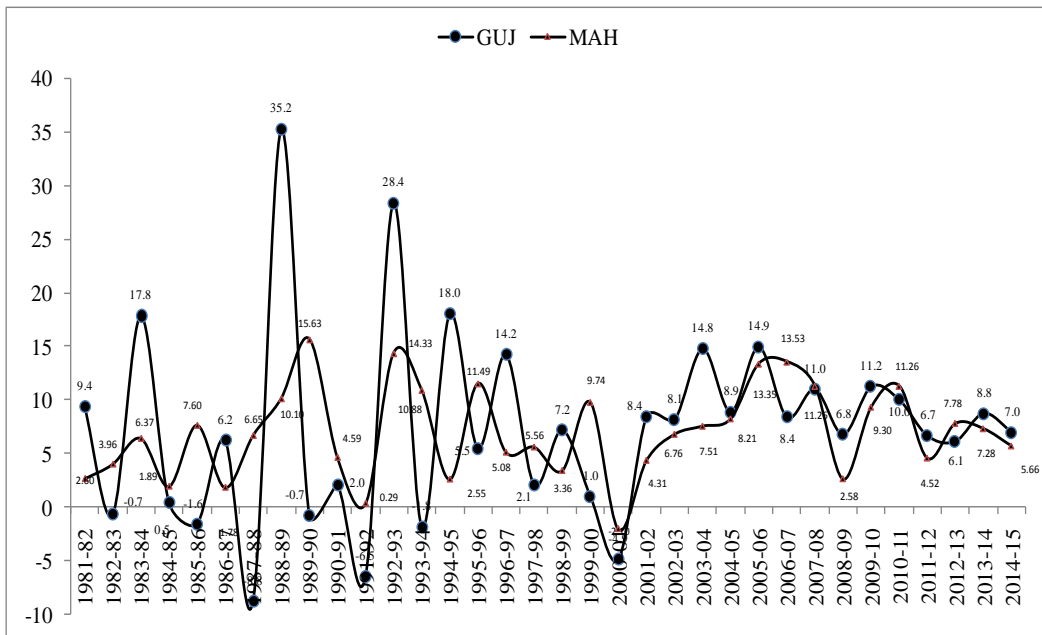
This downturn in the economic condition is a concern. However, it is noted that the average growth of India's GDP at factor cost (real) during 2012-13 and 2013-14 was only 5.55 percent. The trend growth of GDP also declined from 7.54 percent in 2010-11

to 6.78 percent in 2014-15 (Chart 2). Thus, the growth pattern of Tamil Nadu is more or less, in general, consistent with all India growth pattern.

In 2013-14, among the major Indian States, Tamil Nadu's share (8.16 percent) in GDP (nominal) was the third largest, next only to Maharashtra (14.42 percent) and Uttar Pradesh (8.24 percent). Gujarat ranked fourth with 7.31 percent share. As the long term (1981-82 to 2014-15) average growth of Uttar Pradesh economy was relatively low (4.94 percent) as compared to Gujarat, the growth performances of Maharashtra and Gujarat are briefly compared with Tamil Nadu's growth performance below.

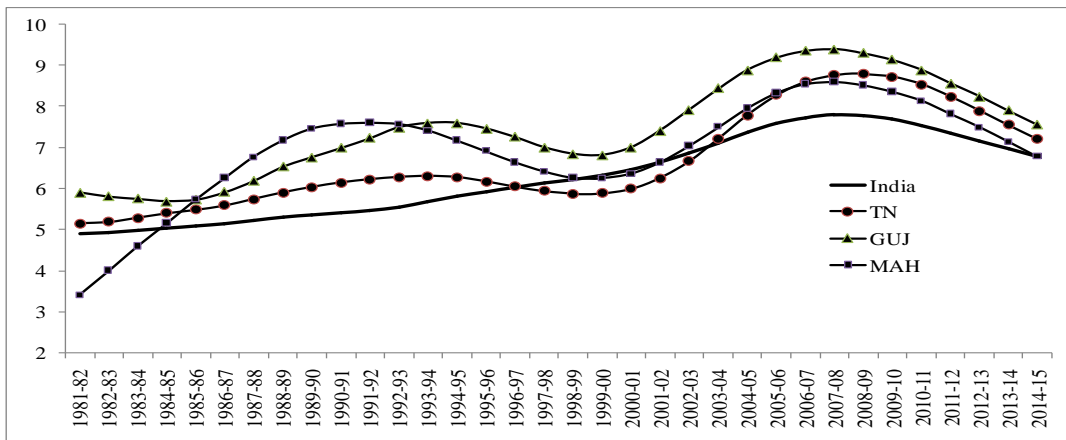
While the average growth of all these three economies was almost equivalent (about 6 percent) during 1981-82 to 2000-01, like Tamil Nadu, Maharashtra's average growth declined to 4.12 percent during 2000-01 to 2003-04 (Chart 3). But Gujarat economy recorded an average growth of 6.6 percent during this period. Therefore, its long-term (1981-82 to 2014-15) growth (7.46 percent) was slightly higher than that of both Maharashtra (6.9 percent) and Tamil Nadu (6.7 percent). It seems that Tamil Nadu missed the bus during 2000-2004. However, it is interesting to note that during the last 11 years (2004-05 to 2014-15), rate of growth of Tamil Nadu (9.2 percent) was slightly higher than that of Gujarat (9.1 percent) and Maharashtra (8.6 percent).

Chart 3: Actual Growth Rates of GSDP (real) in Gujarat and Maharashtra



The trend growth pattern shown in Chart 4 reveals that Tamil Nadu’s rate was lower than Gujarat’s rate, but higher than Maharashtra’ rate and all India rate till 1984-85. From 1985-86 onwards, Maharashtra’s trend growth went ahead of both Tamil Nadu and Gujarat. But Gujarat had overcome Maharashtra from 1993-94 and since then it stayed top among these three states. After 2006-07, Tamil Nadu’s trend growth went ahead of Maharashtra’ s rate. However, it is noted that the trend growths of all these three economies continuously have come down after reaching their respective peak rate in 2007-08. This down turn in the economy is the major concern.

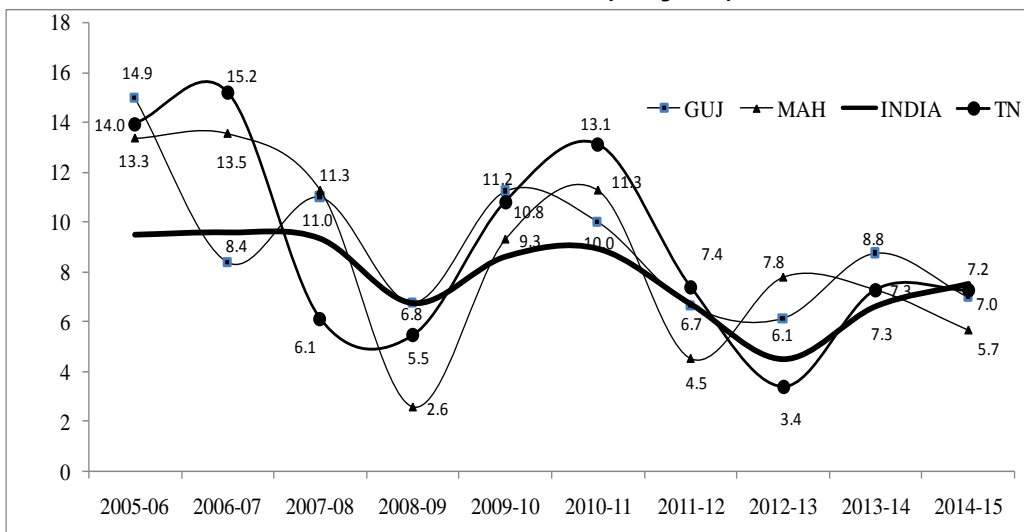
Chart 4: Trend Growth of Tamil Nadu, Gujarat, and Maharashtra (based on HP Filter)



Medium-term Growth Performance

Comparing the growth performance of Tamil Nadu (at 2004-05 prices) with all India growth performance in the medium term, i.e., from 2005-06 to 2014-15, the following features stand out: (i) in the initial two years, Tamil Nadu compared well with the all India growth, (ii) during the recession (2007-08 and 2008-09), the state compared poorly with all India performance, (iii) in 2009-10 and 2010-11, the revival in Tamil Nadu was faster than that in all India, and (iv) when GDP growth declined to 4.5 percent in 2012-13, Tamil Nadu’s growth rate also dipped to 3.4 percent (Chart 5). This cyclical trend clearly shows that Tamil Nadu’s growth is highly volatile and more vulnerable to external shocks as compared to the all India growth pattern due to increased globalization and structural changes in the economy.

Chart 5: Medium Term Growth of Tamil Nadu, Gujarat, Maharashtra and India



Both Gujarat and Maharashtra's growth paths were also more volatile than all India growth path. During this medium period (2004-05 to 2014-15), Gujarat's growth was always higher than all India growth except in only one year (2006-07).

Thus, growth rate of Tamil Nadu GSDP has been more than the GDP growth in some years but the reverse is also true for some other years. In general, there is a tendency when the GDP growth rises, the GSDP growth of Tamil Nadu also rises but at faster rate and when GDP falls, the GSDP of Tamil Nadu falls even faster. This led to greater uncertainty and raised doubt about achieving the sustainable growth in Tamil Nadu.

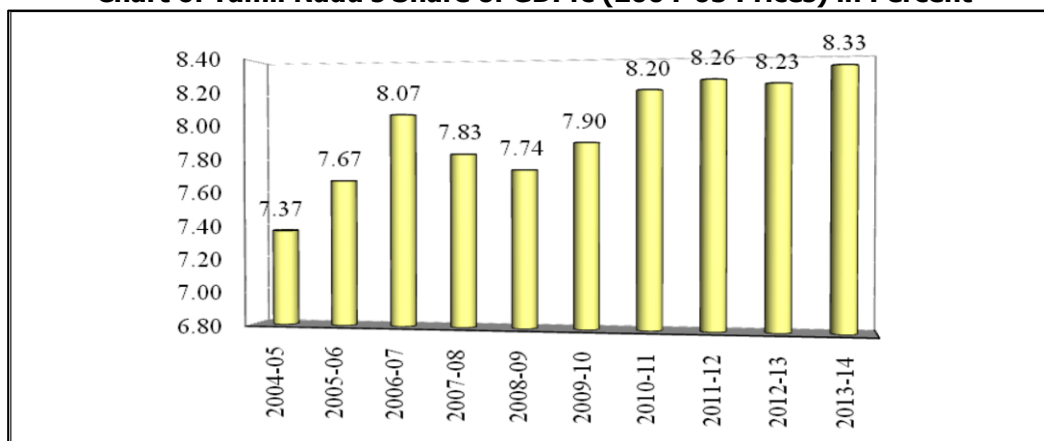
Despite the cyclical trend and high volatile nature of growth pattern, the market size as indicated by the share of Tamil Nadu's GSDP increased from 7.37 percent of GDP of the country in 2004-05 to 8.07 percent in 2006-07. But it declined to 7.74 percent in 2008-09 as a result of global slowdown and then started increasing and reached 8.33 percent level in 2013-14 (Table 1 and Chart 6).

Table 1: Tamil Nadu's Share of GSDP (at 2004-05 prices)

Years	GSDP (Rs. Crore)	GDPfc (Rs. Crore)	TN Share (percent)
2004-05	219003	2971464	7.37
2005-06	249567	3253073	7.67
2006-07	287530	3564364	8.07
2007-08	305157	3896636	7.83
2008-09	321793	4158676	7.74
2009-10	356632	4516071	7.9
2010-11	403416	4918533	8.2
2011-12	433353	5247530	8.26
2012-13	451313	5482111	8.23
2013-14	478975	5748564	8.33

Source (Basic Data): CSO (website).

Chart 6: Tamil Nadu's Share of GDPfc (2004-05 Prices) in Percent



This also clearly demonstrates higher volatility in the growth trend of the state due to its larger linkage with the global economy. It also indicates the need for significantly higher fiscal buffers for the Government of Tamil Nadu to undertake counter cyclical policy measures necessary for stabilizing the economy during the years with growth downturn.

During 2004-05 to 2013-14, the average growth of per capita income of Tamil Nadu in 2004-05 prices was 8.41 percent and that of all India was 6.15 percent (Table 2). During this period, the per capita income of the state was always higher than that of

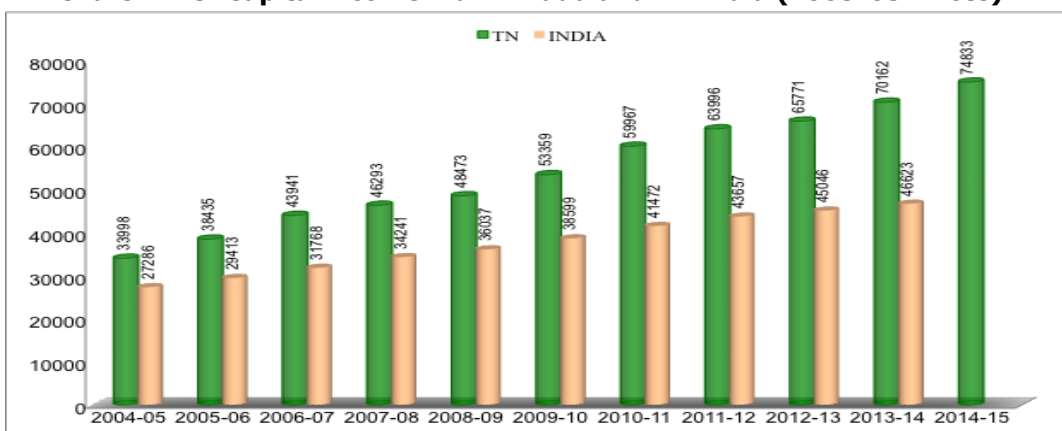
the nation. In 2013-14, the per capita income (in 2004-05 prices) of Tamil Nadu was Rs. 70162 while the per capita income of the country was Rs. 46623 (Chart 7).

Table 2: Growth of Per Capita Income (in 2004-05 Prices)

	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15
Tamil Nadu	33998	38435 (13.05)	43941 (14.33)	46293 (5.35)	48473 (4.71)	53359 (10.1)	59967 (12.38)	63996 (6.72)	65771 (2.77)	70162 (6.67)	74833 (6.66)
India	27286	29413 (7.79)	31768 (8.01)	34241 (7.79)	36037 (5.25)	38599 (7.11)	41472 (7.44)	43657 (5.27)	45046 (3.18)	46623 (3.50)	

Source (Basic Data): Government of India, Central Statistical Organization. Figures in parentheses are annual growth rates.

Chart 7: Per Capita Income: Tamil Nadu and All India (2005-05 Prices)



Short-term Growth Performance

Tamil Nadu economy grew at an average rate of 5.34 percent in the short term, i.e., from 2012-13 to 2013-14 and it ranked 18th in terms of growth (Table 3). Tamil Nadu faced a similar situation when its average growth declined to 5.79 percent during 2007-08 to 2008-09 and its rank declined to 21st position. But Tamil Nadu economy has successfully emerged out of these recession years and it has the potential to register a double-digit average growth. It is noted from Chart 5 that the growth curve has already turned up in 2013-14 and it is expected to move up further, unless there is a severe negative global (and/or other) shock. As Tamil Nadu economy has frequently performed poorly in short terms particularly when there has been global slow down, it is imperative to find out the sectors and regions, which are the causes of concerns.

Table 3: Average Annual Growth of GSDP in Constant prices and Per Capita Income of Major Indian States

States	GSDP Growth (percent)								Per Capita Income	
	1981-82 to 2012-13	RANK	2005-06 to 2013-14	RANK	2007-08 to 2008-09	RANK	2012-13 to 2013-14	RANK	(2013-14) Rs.	RANK
Andhra Pradesh	6.28	8	7.00	15	7.63	13	5.60	14	48817	11
Arunachal Pradesh	7.25	2	6.10	20	10.39	3	3.65	21	40193	13
Assam	4.18	18	5.57	22	5.27	22	6.33	10	27540	20
Bihar	5.66	12	9.45	3	10.05	4	9.91	1	17163	22
Chhattisgarh	-	-	8.04	10	8.50	10	6.89	8	35948	16
Gujarat	7.48	1	9.33	4	8.89	8	7.45	6	74173	3
Haryana	6.87	5	8.52	7	8.31	11	6.24	11	75314	2
Himachal Pradesh	6.26	9	7.79	11	7.99	12	6.19	12	67105	6
Jammu and Kashmir	4.62	17	5.93	21	6.43	19	5.49	16	37903	14
Jharkhand	-	-	7.20	14	9.38	6	8.17	3	33573	17
Karnataka	6.49	7	7.62	12	9.86	5	6.62	9	52719	10
Kerala	5.64	13	7.38	13	7.17	15	6.10	13	66862	7
Madhya Pradesh	5.67	11	8.25	8	8.58	9	9.09	2	30617	19
Maharashtra	6.97	4	8.98	6	6.92	18	7.53	5	76917	1
Odisha	5.12	15	6.59	19	9.34	7	2.79	22	31707	18
Punjab	5.34	14	6.74	16	7.45	14	5.19	19	57349	8
Rajasthan	7.00	3	8.14	9	7.11	17	5.60	15	36485	15
Tamil Nadu	6.67	6	9.20	5	5.79	21	5.34	18	70162	4
Telangana	-	-	9.80	2	11.99	2	4.44	20	56891	9
Uttar Pradesh	4.91	16	6.63	18	7.16	16	5.37	17	22140	21
Uttarakhand	-	-	12.45	1	15.39	1	7.94	4	68820	5
West Bengal	5.82	10	6.64	17	6.33	20	7.22	7	40592	12

Source (Basic Data): CSO website.

Inter State Comparison

An interstate comparison reveals that Tamil Nadu ranks fourth in per capita income (in 2004-05 prices) in 2013-14 among the major Indian states, next only to Maharashtra, Haryana and Gujarat (Table 3). During 2004-05 to 2014-15, its average annual GSDP growth was about 9 percent, which was higher than all India GDP growth of 7.72 percent and GSDP growth of any other southern state (Table 4). During the same period, Uttarkhand ranked first among the major states with its GSDP growth of 12.14 percent. Interestingly, the poorer state-Bihar recorded 9.45 percent growth during this period.

Maharashtra, Uttar Pradesh and Tamil Nadu were the top three states in terms of GSDP share in GDP in 2013-14. Table 4 also reveals that Tamil Nadu was one among the top four states in the country in GDP share in 1980-81 and also in average share during 1980-81 to 2013-14.

Other Economic and Social Indicators

Table 5 provides the details of selective economic indicators in major Indian states. Tamil Nadu ranks first in bank credit-deposit ratio (followed by Andhra Pradesh and Maharashtra), sixth in poverty ratio, 6th in average per capita monthly consumption expenditure in rural areas, and 7th in average monthly per capita consumption expenditure in urban areas. In terms of manufacturing competitiveness index (in 2014), Tamil Nadu ranks third.⁵ This index was prepared first time by the Institute of Competitiveness, using the conceptual antecedents from "The Determinants of National Competition" by Porter et al. This aggregate index made up of four interrelated factors, viz., state business environment, social infrastructure, political stability and macroeconomic conditions.

⁵ It considers five stages of manufacturing development, namely weak, weak to medium, medium, medium to strong and strong. Tamil Nadu was kept under strong stage, but next to Maharashtra and Gujarat.

Table 4: Average Annual Growth of GSDP in Constant Prices and GDP Share of Major Indian States

States	GSDP (real) Growth in percent				Share in GDP (nominal) in percent			
	1981-82 to 1989-90	1990-91 to 1999-00	2000-01 to 2004-05	2005-06 to 2014-15 (13-14)	1981-82 to 2014-15	1980-81	2013-14	Average
Andhra Pradesh	6.66	5.27	6.32	7.02	6.31	6.78	4.43	6.35
Arunachal Pradesh	8.14	6.53	9.17	6.19	7.24	0.08	0.13	0.10
Assam	4.18	2.68	4.67	5.65	4.24	2.33	1.52	2.09
Bihar	4.41	3.26	5.87	9.45	5.77	4.07	3.28	3.27
Chhattisgarh	-	2.87	6.23	7.82		-	1.77	-
Delhi	7.84	6.79	6.03	9.05	7.62	2.22	3.73	2.90
Goa	4.81	8.65	5.10	10.26*	7.50*	0.30	0.47	0.34
Gujarat	6.37	7.01	7.06	9.33*	7.48*	6.16	7.31	6.55
Haryana	6.34	5.28	8.10	8.44	6.90	2.89	3.71	3.08
Himachal Pradesh	5.24	5.71	6.45	7.79*	6.26*	0.78	0.79	0.75
Jammu and Kashmir	3.18	4.93	4.21	5.18	4.44	1.15	0.84	0.92
Jharkhand	-	5.35	4.54	7.33		-	1.65	-
Karnataka	5.64	6.92	5.07	7.56	6.50	5.10	5.87	5.34
Kerala	3.33	5.93	6.07	7.38*	5.64*	4.15	3.78	3.81
Madhya Pradesh	4.29	6.28	2.26	8.45	5.80	5.14	4.15	4.37
Maharashtra	6.29	6.80	4.94	8.63	6.93	13.18	14.42	13.52
Manipur	4.99	5.50	4.11	5.57*	5.17*	0.19	0.14	0.17
Meghalaya	5.43	6.04	6.01	8.34	6.55	0.19	0.21	0.20
Mizoram	-		5.84	8.68*		0.06	0.10	0.09
Nagaland	-	4.35	10.69	7.60		0.12	0.17	0.17
Orissa	5.36	2.90	6.48	6.74	5.21	3.30	2.61	2.71
Punjab	5.73	4.45	3.88	6.60	5.34	4.06	3.03	3.72
Rajasthan	7.21	6.70	5.16	7.90	6.96	4.26	4.94	4.50
Sikkim	-	5.83	7.68	16.49*		0.05	0.12	0.06
Tamil Nadu	5.54	6.42	4.66	9.00	6.69	7.19	8.16	7.48
Telangana	-			9.35		-	3.74	1.01
Tripura	5.51	7.16	8.08	8.63*	7.26*	0.29	0.26	0.27
Uttar Pradesh	4.97	4.02	3.49	6.56	4.94	12.59	8.24	10.15
Uttarakhand		3.22	9.62	12.14		-	1.17	-
West Bengal	4.29	6.65	5.49	6.69	5.86	8.97	6.75	7.52
Puducherry	4.21	8.82	4.92	10.71	7.58	0.17	0.20	0.17
A and N Islands	5.66	5.66	5.11	9.92*	6.73*	0.06	0.06	0.06
Chandigarh	-	9.33	11.62	7.11*		-	0.28	-

Source (Basic Data): Up to 2004-05, EPW Research Foundation; From 2004-05, the CSO. * up to 2013-14.

Table 5: Economic Indicators in Major Indian States

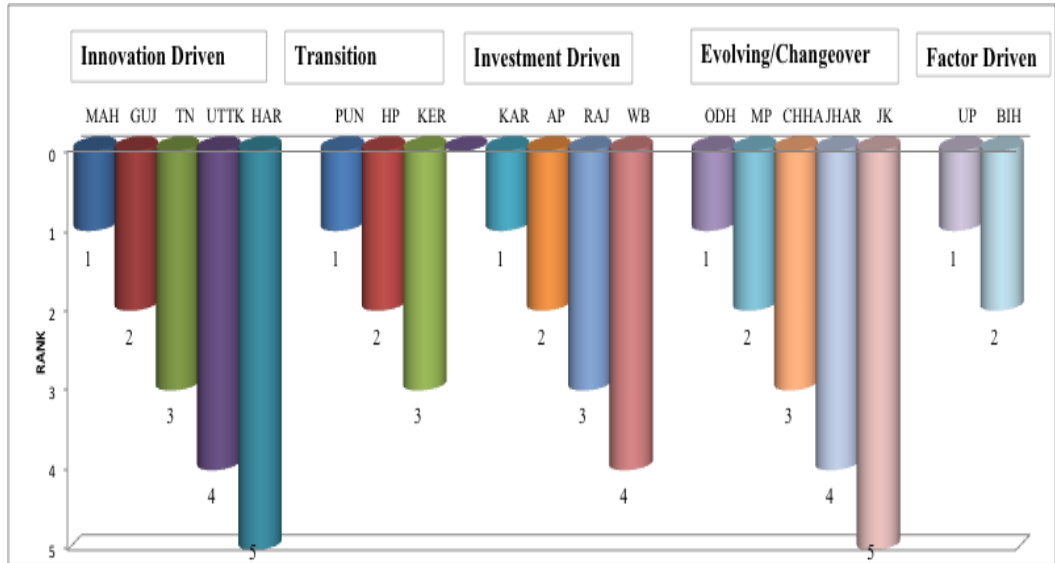
States	Monthly PC Expenditure (2011-12)- Rural		Monthly PC Expenditure (2011-12)- Urban		Manufacturing Competitiveness Index		Credit-Deposit Ratio		Poverty Ratio	
	Rs.	Rank	Rs.	Rank	2014	Rank	Mar 2014	Rank	2011-12	Rank
Andhra Pradesh	1754	4	2685	6	60.94	4	111.3	2	9.2	3
Bihar	1127	14	1507	17	52.35	17	32.8	16	33.7	15
Chhattisgarh	1027	15	1868	16	53.84	15	59.5	12	39.9	17
Gujarat	1536	10	2581	9	64.75	2	74.7	7	16.6	8
Haryana	2176	3	3819	1	60.48	5	78.1	6	11.2	4
Jharkhand	1006	16	2018	14	53.39	16	31.8	17	37	16
Karnataka	1561	9	3026	4	60.1	6	71.0	8	20.9	11
Kerala	2669	1	3408	2	58.3	9	67.7	9	7.1	1
Madhya Pradesh	1152	13	2058	12	56.73	12	60.4	11	31.7	13
Maharashtra	1619	7	3189	3	67.07	1	89.8	3	17.4	9
Orissa	1003	17	1941	15	56.05	14	44.6	14	32.6	14
Punjab	2345	2	2794	5	57.17	10	79.1	5	8.3	2
Rajasthan	1598	8	2442	10	57.06	11	87.1	4	14.7	7
Tamil Nadu	1693	6	2622	7	64.63	3	121.8	1	11.3	6
Uttar Pradesh	1156	12	2051	13	59.74	7	44.6	13	29.4	12
Uttarakhand	1726	5	2339	11	56.63	13	35.6	15	11.3	5
West Bengal	1291	11	2591	8	58.34	8	61.6	10	20	10
All India	1430		2630				79.0		21.9	

Chart 8 shows the performance of Indian states based on their competitiveness score (2014), given in "The State Competitiveness Report" by Mint Asia and Institute of Competitiveness, India. It basically compares the states with similar per capita GSDP⁶ to assess their competitiveness by looking at factors like factor availability (of land, labor and capital), role played by Government in facilitating business and the profile of consumers in each state. Tamil Nadu is one among the top income (innovation driven)

⁶As states varied with demographic size, natural resources, and income levels, states are categorized into: (i) factor driven with per capita income of less than \$400 (UP and Bihar), (ii) changeover with per capita income ranged \$400-\$525 (MP, Odhisa, JandK, Chhattisgarh and Jharkhand), (iii) Investment driven with per capita income ranged \$525-\$800 (AP, Karnataka, Rajasthan, West Bengal), (iv) Transition economies with income ranged \$800-\$925 (Punjab, HP and Kerala) and (v) Innovation driven with per capita income above \$925 (Maharashtra, Gujarat, TN, Haryana and Uttaranchal).

categories and ranked third among the major nations, next only to Maharashtra and Gujarat.

Chart 8: Ranking of Indian States based on Competitiveness Score 2014



Source: The State Competitiveness Report, 2014.

Chart 9 plots the monthly CPI inflation (Industrial workers) for Tamil Nadu, Maharashtra, Gujarat and All India from April 2004 to December 2013. Up to April 2007, Tamil Nadu’s inflation was in general less than all India inflation. But in the recession period till April 2009 it was higher than all India inflation. Then up to Jan 2012, it was kept below all India inflation, but after that it was again kept above the all India inflation. This pattern clearly shows that during recession period, the prices in Tamil Nadu (at least in urban areas) have gone above the all India price level. This needs special attention. It is interesting to note that in the recession period till April 2009, inflation levels in both Maharashtra and Gujarat were well below all India level. While inflation levels at Gujarat and Maharashtra went up in 2012, Gujarat’s inflation came down in the beginning of the next year.

Chart 9: CPI_IW Inflation (April 2004-December 2013): Tamil Nadu and India

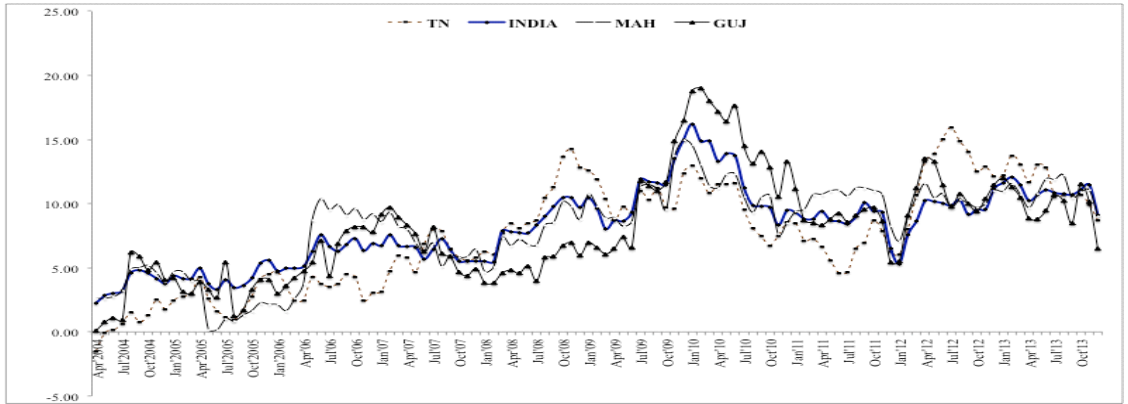


Table 6: Social Indicators in Major (and Selective) Indian States

States	2013						2011					
	IMR	RA NK	Birth Rate	RA NK	Death Rate	RA NK	Literacy	RA NK	Female Literacy	RA NK	Urban Ratio	RA NK
Andhra Pradesh	29	10	17.4	6	7.3	13	67.7	14	59.7	13	33.5	8
Bihar	33	13	27.6	17	6.6	7	63.8	17	53.3	16	11.3	17
Chhattisgarh	38	15	24.4	12	7.9	15	71.0	11	60.6	11	23.2	14
Gujarat	22	4	20.8	10	6.5	5	79.3	5	70.7	7	42.6	4
Haryana	32	12	21.3	11	6.3	3	76.6	8	66.8	9	34.8	7
Jharkhand	27	9	24.6	13	6.8	9	67.6	15	56.2	15	24.1	13
Karnataka	24	7	18.3	8	7	11	75.6	9	68.1	8	38.6	5
Kerala	9	1	14.7	1	6.9	10	93.9	1	92.0	1	47.7	2
Madhya Pradesh	37	14	26.3	15	8	16	70.6	12	60.0	12	27.6	11
Maharashtra	16	2	16.5	5	2.2	1	82.9	2	75.5	2	45.2	3
Odisha	38	16	19.6	9	8.4	17	73.5	10	64.4	10	16.7	16
Punjab	23	6	15.7	3	6.7	8	76.7	7	71.3	4	37.5	6
Rajasthan	30	11	25.6	14	6.5	6	67.1	16	52.7	17	24.9	12
Tamil Nadu	17	3	15.6	2	7.3	12	80.3	3	73.9	3	48.5	1
Uttar Pradesh	38	17	27.2	16	7.7	14	69.7	13	59.3	14	22.3	15
Uttarakhand	22	5	18.2	7	6.1	2	79.6	4	70.7	6	30.6	10
West Bengal	26	8	16	4	6.4	4	77.1	6	71.2	5	31.9	9
ALL-INDIA	40		21.4		7		74.0		65.5		31.2	

Table 6 provides the details of selective social and demographic indicators in major Indian states. Tamil Nadu ranked first in urbanization with about 49 percent of urban ration in 2011. Tamil Nadu ranks second in (low) birth rate, next only to Kerala. It ranks third in infant mortality rate, literacy and female literacy. But it ranks twelfth in

death rates. Even poor income states like Bihar and Madhya Pradesh compare well in death rate. This needs special attention.

Concluding Remarks⁷

This Chapter has briefly reviewed the overall growth performance of Tamil Nadu economy since 1980s. Tamil Nadu is a better performing state as its long-term growth rate of 6.69 percent is slightly higher than all India growth of 6.28 percent. Its long-term average growth is also closer to other big economies- Maharashtra (6.9 percent) and Gujarat (7.46 percent). The long-term trend (potential) growth rate was also higher than Maharashtra and all India, but slightly slower than Gujarat.

In the medium-term (since 2005), Tamil Nadu is performing better than all India and other two top economies. During 2005-2015, Tamil Nadu's average growth rate was 9.2 percent, which is about 1.5 percentage points above the all India growth of 7.7 percent. Other top two economies' average growth rates (Gujarat- 9.1 percent and Maharashtra - 8.6 percent) were slightly lower than that of Tamil Nadu.

Tamil Nadu ranks fourth in terms of average growth as well as per capita income. It also compares well with many other Indian states in many demographic and social indicators. However, the great concern is its short run growth dynamics. During the recession period, its growth has dipped into a very low level as compared to all India as well as other two top economies. Further its growth is highly volatile and vulnerable to external shocks due to increased globalization (i.e., high dependency on all India and foreign nations). Its inflation was also high during the recession periods as compared to other major economies.

While other top economies also responded more or less the same way as reacted by Tamil Nadu during the recession periods, its persistent inflation and high volatile nature of growth are major concerns. While evidences indicate that Tamil Nadu economy has successfully emerged out of the recession years in the recent past (two occasions) and potential to register a double-digit growth in the medium term, there is a need to identify the sectors and regions causing the sudden fall in the overall growth rate during the recession years. The next two chapters deal with these issues.

⁷ A brief review on state government finances is given in Appendix A.

Chapter 3

SECTORAL PERFORMANCE IN TAMIL NADU

In this Chapter, we look at Tamil Nadu's growth experience in terms of (a) sectoral growth, (b) relative contribution of sectoral growth to overall growth, and (c) changes in sectoral composition of GSDP.

Sectoral Growth Pattern

Table 7 (and Chart 10) provides a profile of sectoral growth rates and the overall GSDP growth rate for Tamil Nadu during 2005-06 to 2013-14. All figures relate to the GSDP at 2004-05 prices. For the purpose of this analysis, we have divided GSDP into three major sectors:

1. Agriculture and Allied Services (primary sector);
2. Industry (includes mining and quarrying, manufacturing, electricity, gas and water supply and construction); and
3. Services (includes (i) transport, storage and communication, (ii) trade, hotels and restaurants, (iii) banking and insurance, (iv) real estate, ownership of dwellings etc, and (v) other services).

Chart 10: Sectoral Growth in Tamil Nadu

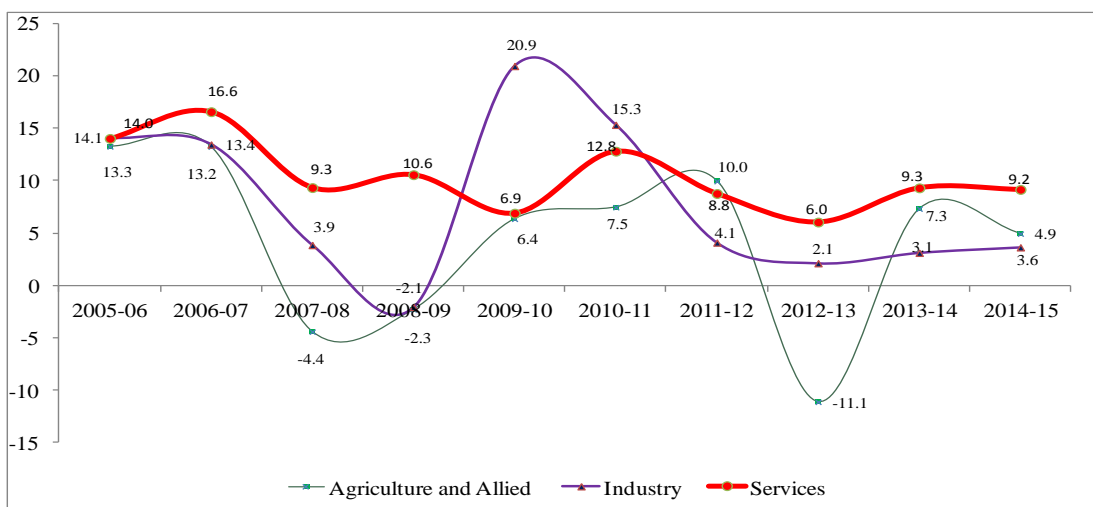


Table 7: Annual Growth Rates: Sector-wise Performances at 2004-05 Prices

Sectors/Sub-sectors	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	Avg.	XI Plan	Last 3 yrs.	Last 2 yrs	First 3 yrs of XI Plan
GSDP (Tamil Nadu)															
Agriculture and Allied	13.26	13.24	-4.41	-2.29	6.35	7.47	9.95	-11.11	7.33	4.94	4.47	3.41	0.39	6.13	-0.12
Agriculture	11.49	15.42	-4.69	-2.70	6.56	7.69	11.05	-13.04	8.22	4.71	4.47	3.58	-0.03	6.47	-0.28
Forestry, Logging	5.74	-0.54	2.82	-0.88	3.16	3.30	2.49	3.44	4.08	4.40	2.80	2.18	3.97	4.24	1.70
Fishing	43.04	1.95	-6.47	1.17	6.58	8.16	3.40	1.03	0.70	7.84	6.74	2.57	3.19	4.27	0.43
Industry	14.08	13.44	3.86	-2.06	20.93	15.32	4.09	2.12	3.11	3.64	7.85	8.43	2.96	3.38	7.58
Manufacture	15.11	18.75	0.59	-1.31	29.18	12.31	1.42	1.12	4.58	2.58	8.43	8.44	2.76	3.58	9.49
Mining and Quarrying	-4.86	4.36	1.17	-1.78	9.30	3.13	13.15	5.96	6.01	7.49	4.39	4.99	6.49	6.75	2.90
Construction	16.19	4.45	18.61	5.31	5.18	22.49	9.24	-2.18	1.22	5.76	8.63	12.17	1.60	3.49	9.70
Services	14.02	16.57	9.33	10.56	6.90	12.80	8.77	6.05	9.31	9.16	10.35	9.67	8.17	9.23	8.93
Trade Hotels Restaurants	16.28	20.58	4.30	3.66	4.50	13.22	7.68	2.76	7.33	7.62	8.79	6.67	5.91	7.48	4.15
Transport, Storage, Communication	12.40	13.56	9.35	15.49	13.87	14.13	7.53	4.41	6.73	5.70	10.32	12.07	5.61	6.22	12.90
Real Estate, Ownership of Dwellings	15.17	16.50	16.75	13.40	6.82	10.03	14.16	12.79	14.99	16.45	13.71	12.23	14.74	15.72	12.32
Banking and Insurance	17.55	19.09	17.11	10.18	2.97	14.65	9.73	12.65	12.65	7.85	12.44	10.93	11.05	10.25	10.09
Other Services	12.18	11.48	7.34	10.31	10.69	14.26	7.46	2.35	5.08	7.29	8.85	10.01	4.91	6.19	9.45
GSDP	13.96	15.21	6.13	5.45	10.83	13.12	7.39	3.39	7.29	7.25	9.20	8.58	5.98	7.27	7.47

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Sectors/Sub-sectors	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	Avg.	XI Plan	Last 3 yrs.	Last 2 yrs.	First 3 yrs. of 11 th Plan
GDP fc (India)															
Agriculture and Allied	5.14	4.16	5.80	0.09	0.81	8.60	5.02	1.42	3.66	0.23	3.49	4.06	1.77	1.94	2.23
Agriculture	5.53	4.13	6.34	-0.27	0.41	9.54	5.34	0.91	n.a	n.a		4.27			2.16
Forestry, Logging	1.79	3.27	1.39	1.88	2.91	2.37	1.85	2.85	n.a	n.a		2.08			2.06
Fishing	5.88	6.61	5.80	2.74	3.24	5.83	5.70	7.15	n.a	n.a		4.66			3.93
Industry	9.72	12.17	9.67	4.44	9.16	7.55	7.81	0.96	4.53	6.12	7.21	7.73	3.87	5.32	7.76
Manufacture	10.10	14.32	10.28	4.33	11.30	8.86	7.41	1.14	5.32	7.13	8.02	8.43	4.53	6.23	8.63
Mining and Quarrying	1.31	7.47	3.69	2.14	5.89	6.54	0.10	-2.16	5.39	2.42	3.28	3.67	1.88	3.90	3.91
Elect. Gas and Water sup	7.10	9.29	8.27	4.56	6.22	5.26	8.38	2.26	4.76	7.90	6.40	6.54	4.97	6.33	6.35
Construction	12.79	10.33	10.78	5.34	6.65	5.72	10.80	1.11	2.48	4.77	7.08	7.86	2.79	3.62	7.59
Services	10.56	9.58	10.07	10.76	10.53	8.90	7.26	7.53	9.05	10.16	9.44	9.50	8.91	9.60	10.45
Trade, Hotel, Restaurant Transport, storage, Com.	12.05	11.61	10.93	7.49	10.39	12.20	4.33	5.07	11.09	10.68	9.58	9.07	8.95	10.88	9.60
Trade Hotels Restaurants	12.17	11.12	10.10	5.68	7.92	11.96	1.23	4.45	n.a	n.a		7.38			7.90
Transport, Storage, Communication	11.82	12.56	12.48	10.83	14.75	12.60	9.45	6.01	n.a	n.a		12.02			12.69
Finance, Real Estate etc	12.62	13.96	11.95	12.02	9.70	10.01	11.35	10.92	7.87	11.54	11.19	11.01	10.11	9.71	11.23
Real Estate, Ownership of Dwellings	10.56	9.51	8.44	10.44	8.33	5.90	9.90	10.04	n.a	n.a		8.60			9.07

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Sectors/Sub-sectors	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	Avg.	XI Plan	Last 3 yrs.	Last 2 yrs.	First 3 yrs. of 11 th Plan
GDP fc (India)															
Banking and Insurance	15.82	20.56	16.69	14.01	11.38	14.87	12.92	11.84	n.a	n.a		13.97			14.03
Public Admin, and Others	7.07	2.81	6.87	12.52	11.73	4.24	4.90	5.31	7.95	7.22	7.06	8.05	6.83	7.59	10.37
Other Services	9.08	3.47	6.35	7.39	7.16	8.22	5.43	6.79	n.a	n.a		6.91			6.97
Public Administ, Defence	4.34	1.88	7.61	19.81	17.55	-0.39	4.24	3.43	n.a	n.a		9.76			14.99
GDP fc (India)	9.48	9.57	9.32	6.72	8.59	8.91	6.69	4.47	6.64	7.17	7.76	8.05	6.09	6.90	8.21

Source (Basic Data): Central Statistical Organization, Government of India.

During 2005-06 to 2014-15 (medium-term), the agriculture and allied sector in Tamil Nadu grew at an average rate of 4.47 percent as against its growth of 3.49 percent at all India level. In the Eleventh Plan period (2007-08 to 2011-12), this sector in Tamil Nadu grew at 3.41 percent as it recorded negative growth in the initial two years due to bad monsoons.⁸ In the initial two years of Twelfth Plan period, this sector recorded an average growth of 1.89 percent despite the monsoon failure. Thus, there is an element of cyclicity in the growth process of agriculture sector.

A comparison of growth performances of agriculture and allied sectors during initial three years of both 11th plan and 12th plan also confirms the element of cyclicity. During the first three years of 11th Plan and 12th Plan, this sector recorded -0.12 percent and 0.39 percent growth. A (small but) positive growth of this sector during the 12th Plan was due to various initiatives of the Government for the development of this sector like Second Green Revolution, millet mission, Second White Revolution, etc. There are signs of improvements in the sub sectors of primary sector. In the coming years, with the support of good monsoon, the growth performance of this sector is expected to improve further and may reach the target growth of 5 percent set in the 12th Plan.

During the last 10 years (i.e., 2005-06 to 2014-15), industry recorded an average growth of 7.85 percent in Tamil Nadu as against the all India industry growth of 7.21 percent. In the Eleventh Plan period, Tamil Nadu's industry grew at 8.43 percent (as against the target of 9.2 percent) mainly due to its better performance in 2009-10 and 2010-11. After 2010-11, its growth continuously declined and reached 3.6 percent in 2014-15. As a result the average growth of industry in the initial three years of 12th Plan came down to 2.96 percent as against (12th Plan target of 10.5 percent and) its performance in the initial three years of 11th Plan of 7.58 percent. This is major concern for the Government.

However, the poor performance of industry sector in Tamil Nadu is consistent with this industry's performance with all India level. While this sector at all India level recorded 7.73 percent growth in the Eleventh plan period, its growth declined to 3.87 percent in the first three years of 12th Plan. Realizing the worldwide recession, Government of Tamil Nadu recently organized the Global Investors Meet. The outcome of this important event is yet to be known.

While the services sector grew at an average rate of 9.67 percent in the Eleventh Plan period, it grew at 8.17 percent in the last three years (as against 12th Plan target of 12 percent). Global slowdown (due to Eurozone crisis) in 2011-12 and a worldwide recession after that year affected this sector (and industry) in Tamil Nadu (and India).⁹

⁸ In the initial two years of Tenth Plan (i.e., 2002-03 and 2003-04) also, this sector registered a negative growth.

⁹ As Tamil Nadu produces goods and services for the national and global economies such as automobiles, textiles, and IT products, in response to demand, it would be difficult for the State economy to have autonomous growth during a worldwide recession.

Chart 10 clearly indicates that all these three major sectors went through a recession after 2010-11, particularly industry. It also shows that the agriculture and allied sector and industry growth curves are more volatile than services growth curve. These high volatility in industry and agriculture sector implies that the risk-adjusted returns from them are low and so these sector may find it difficult to attract private investments. An interstate comparison reveals that Tamil Nadu obtained 10th rank in average rate of growth of agriculture and allied sector during 2005-06 to 2014-15 (Table 8). It ranked 6th in terms of industrial growth, next only to Uttarkhand, Bihar, Gujarat, Maharashtra, and Rajasthan. It also ranked 7th in services sector growth, next only to Uttarkhand, Haryana, Jharkhand, Telungana, Bihar, and Gujarat. It ranked 5th in GSDP growth.

Table 8: 10 Year Average Annual Growth of GSDP and its Sub Sectors of Major States (2005-06 to 2014-15) in 2004-05 prices

States	2005-06 to 2014-15 (10 Years)								Last 3 Years (2012-13 to 2014-15)							
	AG. and Alli	R A N K	IN DU ST RY	R A N K	SE RV IC ES	R A N K	G S D P	R A N K	AG. and Alli	R A N K	IN DU ST RY	R A N K	SE RV IC ES	R A N K	G S D P	R A N K
Andhra Pradesh	4.8	8.0	6.1	15.0	8.6	19.0	7.0	15.0	7.1	5.0	0.6	21.0	8.0	13.0	6.1	13.0
Arunachal Pradesh	4.4	12.0	6.3	14.0	8.7	18.0	6.2	20.0	3.0	13.0	6.4	5.0	5.3	21.0	4.8	19.0
Assam	3.2	16.0	3.8	21.0	7.7	22.0	5.7	21.0	3.7	9.0	6.7	4.0	7.2	17.0	6.4	11.0
Bihar	4.7	9.0	12.9	2.0	10.9	5.0	9.5	2.0	2.2	15.0	7.3	2.0	13.5	1.0	9.8	1.0
Chhattisgarh	6.6	4.0	7.6	10.0	9.3	12.0	7.8	10.0	5.5	6.0	5.2	8.0	8.7	8.0	6.5	10.0
Gujarat	7.7	3.0	8.9	3.0	10.5	6.0	9.3	4.0	9.7	3.0	4.8	9.0	9.5	4.0	7.5	5.0
Haryana	3.4	14.0	6.3	13.0	11.7	2.0	8.4	8.0	0.8	18.0	4.5	11.0	9.6	3.0	6.7	9.0
Himachal Pradesh	4.5	11.0	7.8	8.0	10.0	8.0	7.8	11.0	11.4	2.0	2.9	16.0	7.1	19.0	6.2	12.0
Jammuand Kashmir	0.5	21.0	4.3	19.0	8.0	21.0	5.2	22.0	-3.7	22.0	5.5	7.0	4.7	22.0	3.1	22.0
Jharkhand	8.6	2.0	4.2	20.0	11.1	3.0	7.3	14.0	7.7	4.0	4.7	10.0	11.7	2.0	8.3	4.0
Karnataka	5.2	7.0	6.1	16.0	9.2	13.0	7.6	12.0	5.5	7.0	2.8	17.0	9.1	5.0	6.8	8.0
Kerala	-0.4	22.0	2.2	22.0	9.5	10.0	7.4	13.0	0.0	20.0	2.2	18.0	8.4	9.0	6.1	14.0
Madhya Pradesh	9.7	1.0	7.5	11.0	8.4	20.0	8.5	7.0	19.1	1.0	3.1	14.0	7.9	15.0	9.5	2.0
Maharashtra	4.1	13.0	8.4	4.0	9.5	9.0	8.7	6.0	-0.1	21.0	5.9	6.0	8.3	10.0	6.9	7.0
Orissa	2.4	18.0	6.7	12.0	8.8	16.0	6.7	16.0	1.1	16.0	3.8	12.0	6.4	20.0	4.6	21.0
Punjab	1.6	20.0	7.7	9.0	8.9	14.0	6.6	18.0	1.1	17.0	2.1	19.0	8.9	6.0	5.2	18.0
Rajasthan	5.4	6.0	8.0	5.0	9.3	11.0	7.9	9.0	2.5	14.0	3.2	13.0	8.7	7.0	5.7	16.0
Tamil Nadu	4.5	10.0	7.9	6.0	10.4	7.0	9.0	5.0	0.4	19.0	3.0	15.0	8.2	12.0	6.0	15.0
Telungana	6.3	5.0	7.8	7.0	11.0	4.0	9.4	3.0	3.2	12.0	0.0	22.0	7.3	16.0	4.7	20.0
Uttar Pradesh	3.2	15.0	5.5	17.0	8.8	15.0	6.6	19.0	3.3	10.0	2.0	20.0	7.9	14.0	5.6	17.0
Uttarkhand	2.9	17.0	16.3	1.0	12.4	1.0	12.1	1.0	3.8	8.0	11.4	1.0	7.1	18.0	8.4	3.0
West Bengal	2.4	19.0	5.2	18.0	8.7	17.0	6.7	17.0	3.2	11.0	7.2	3.0	8.2	11.0	7.2	6.0
India	3.5		7.2		9.4		7.8		1.8		3.9		8.9		6.1	

Source (Basic Data): Central Statistical Organization, Government of India.

But in the last three years, Tamil Nadu slipped to 19th rank in agriculture and allied sector growth, 15th rank in industry growth, 12th rank in services growth and 15th

rank in GSDP growth. Thus, the short run poor performance of Tamil Nadu is of serious concern. As there is an element of cyclicity in its growth performance, Government needs to plan properly to overcome this issue and make all sectors growth pattern as consistent (or less volatile).

Growth of Sub Sectors

Among the industries, manufacturing grew at an average annual rate of 8.44 percent in the Eleventh Plan period (2007-08 to 2011-12). But in the last three years its growth dipped into 2.76 percent level (Table 7). Rising oil prices and power shortage aggravated the problem along with over all economic downturn of the economy. While the construction industry's growth was 12.2 percent in the Eleventh Plan period it declined to just 1.6 percent in the last three years despite the fact that the real estate growth increased from 12.23 percent in the Eleventh Plan period to 14.74 percent in the last three years. Rising costs of construction materials like cement, sand etc. could be the reasons for slow growth in this sector. However, the poor performance of these two sectors is consistent with their poor performance at all India. At all India level, manufacture grew at only 4.53 percent while construction at 2.79 percent. As high growth of both manufacturing and construction sectors are more important from the employment point of view, the slow down in the growth of these two major sub-sectors is the major concern.

As indicated above, growth of real estate and ownership dwellings increased in the last three years as compared to Eleventh Plan. The Banking and Insurance sectors registered more or less the same growth (11 percent) in the 11th Plan and in the last three years. However, the growth rate of Trade, Hotels and Restaurants declined marginally from about 6.67 percent to 5.91 percent, Transports, Storage and Communication from about 12 percent to 5.6 percent and Other Services from about 10 percent to 5 percent (Table 7). This trend clearly indicates that being a producing state, Tamil Nadu's manufacturing activities and related services activities were severely affected by the global economic downturn.

Relative Contributions of Sectoral Growths to Aggregate Growth

In this Section, we look at the relative contributions of the sectoral growth rates to overall growth rate by decomposing growth as a weighted sum of sectoral growth rates with weights being equal to the respective shares of the sector in the overall GSDP. The weights change every year as explained below. For the purpose of this analysis, we have divided GSDP in to the following 13 sectors:

1. Agriculture
2. Forestry and Logging
3. Fishing
4. Mining and Quarrying
5. Manufacturing
6. Construction
7. Electricity, gas and water supply
8. Transport, Storage and Communication
9. Transport, Hotels and Restaurants
10. Banking and Insurance
11. Real Estate, and Ownership Dwellings
12. Other Services
13. Public Administration

Let Y_t is the GSDP in year t and Y_{t-1} is its value in the previous year ($t-1$). Let the sectors be indicated by subscripts 1, 2, ... n (in our case, $n=13$).

Obviously, Y_t is the sum of GSDP of subsectors, i.e., $Y_t = \sum Y_i = Y_1 + Y_2 + \dots + Y_{13}$.

Change in GSDP over the previous year is:

$$Y_t - Y_{t-1} = \Delta Y_t \quad (1)$$

We can write this change in GSDP for any time period t is the sum of changes in GSDP of subsector as:

$$\Delta Y = \Delta Y_1 + \Delta Y_2 + \dots + \Delta Y_{13} \quad (2)$$

Dividing all terms by Y_{t-1} in the equation (3.2), we have

$$\Delta Y / Y_{t-1} = (\Delta Y_1 / Y_{t-1}) + (\Delta Y_2 / Y_{t-1}) + \dots + (\Delta Y_{13} / Y_{t-1}) \quad (3)$$

The term in the left side of equation (3.3) is the growth rate of aggregate GSDP (i.e., $G(Y) = \Delta Y / Y_{t-1}$). Each term on the right hand side of the equation (3.3) can be multiplied and divided by $(Y_i)_{-1}$ (this is the previous year value) as follows:

$$G(Y) = [(Y_1)_{-1} / Y_{t-1} * (\Delta Y_1 / (Y_1)_{-1})] + [(Y_2)_{-1} / Y_{t-1} * (\Delta Y_2 / (Y_2)_{-1})] + \dots + [(Y_{13})_{-1} / Y_{t-1}] * \{\Delta Y_{13} / (Y_{13})_{-1}\} \quad (4)$$

In the above equation (3.4), each left side term is i th sector's growth rate [$G(Y_i) = (\Delta Y_i / (Y_i)_{-1})$] multiplied with sectoral share [$w_i = (Y_i)_{-1} / Y_{t-1}$]. Thus, the equation (3.4) indicates that the growth rate of aggregate GSDP is a weighted sum of sectoral growth rates, $G(Y_1)$, $G(Y_2)$, .. $G(Y_{13})$, where the weights (w) are the sectoral shares of the previous year.

The growth decomposition results shows that manufacturing was the single most important component of the growth rate, followed by real estate and trade, hotels and restaurants in the normal years. Construction, transport, storage and communication and banking sectors also contributed significantly in many years. Agriculture also contributed in some years and was even strong enough to pull in the negative direction in 2007-08 and 2012-13 (Table 9).

Table 9: Contributions of Sectoral Growth Rates to GSDP Growth

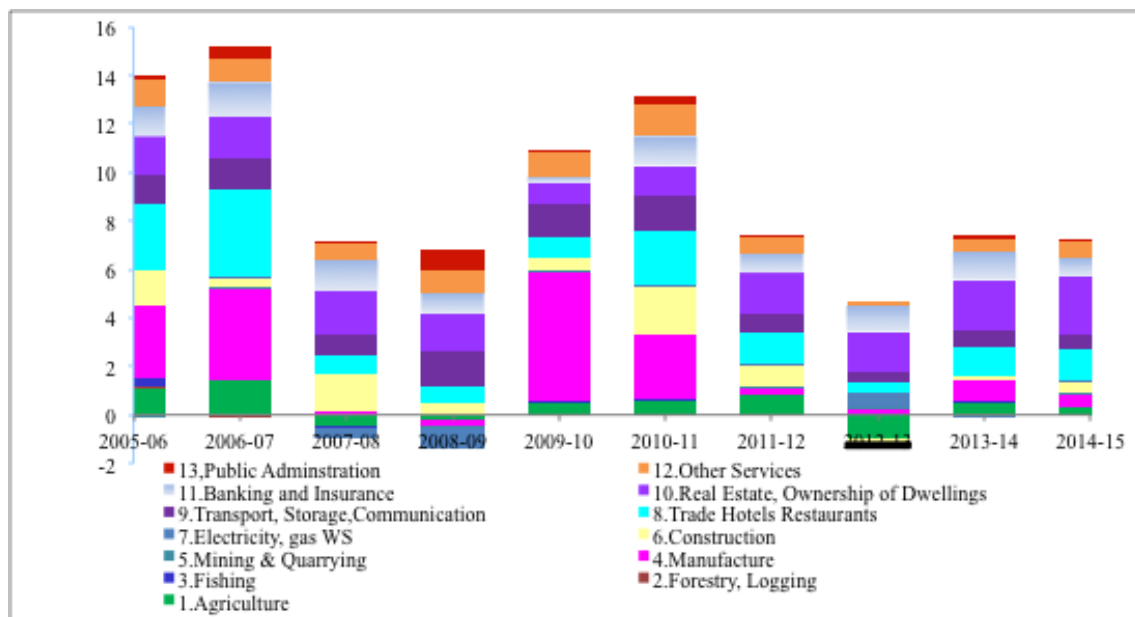
(Percent)

Sectors/Sub-sectors	2005 -06	2006 -07	2007 -08	2008 -09	2009 -10	2010 -11	2011 -12	2012 -13	2013 -14	2014 -15
1.Agriculture	1.10	1.45	-0.44	-0.23	0.51	0.58	0.79	-0.96	0.51	0.29
2.Forestry, Logging	0.04	0.00	0.02	-0.01	0.02	0.02	0.01	0.02	0.02	0.02
3.Fishing	0.33	0.02	-0.05	0.01	0.05	0.06	0.02	0.01	0.00	0.05
4.Manufacture	3.00	3.76	0.12	-0.26	5.34	2.63	0.30	0.22	0.90	0.49
5.Mining and Quarrying	-0.04	0.03	0.01	-0.01	0.05	0.02	0.06	0.03	0.03	0.04
6.Construction	1.45	0.41	1.54	0.49	0.48	1.98	0.88	-0.21	0.11	0.50
7.Electricity, gas WS	0.04	0.07	-0.47	-0.85	0.06	0.12	0.05	0.61	-0.10	0.03
8.Trade Hotels Restaurants	2.78	3.58	0.78	0.66	0.79	2.19	1.28	0.46	1.21	1.26
9.Transport, Storage, Communication	1.15	1.24	0.84	1.44	1.41	1.48	0.79	0.47	0.72	0.60
10.Real Estate, Ownership Dwellings	1.59	1.75	1.80	1.58	0.87	1.23	1.68	1.62	2.07	2.43
11.Banking and Insurance	1.27	1.43	1.32	0.87	0.26	1.21	0.82	1.08	1.18	0.77
12.Other Services	1.09	1.01	0.62	0.89	0.96	1.28	0.68	0.21	0.46	0.64
13,Public Adminstraion	0.15	0.48	0.04	0.88	0.02	0.34	0.03	-0.15	0.18	0.12
GSDP	13.96	15.21	6.13	5.45	10.83	13.12	7.39	3.39	7.29	7.25
Major Problem Sectors (1+4+6+8+9)	9.48	10.43	2.85	2.10	8.54	8.85	4.04	-0.02	3.45	3.15

Source: Computed using basic data from CSO. * - GSDP growth is sum of contributions of all 10 sectors.

Chart 11 also highlights the growing importance of manufacturing, agriculture and allied sector, construction, trade, hotels and restaurants, and transport, storage, and communication services in the overall growth performance of Tamil Nadu.

Chart 11: Sectoral Contributions to Growth



What is apparent is that the growth rate itself was very volatile, due to the fact that agriculture itself is very dependent on rainfall making it very volatile, and manufacture is also very dependent on global demand and volatile in the recession periods. Table 10 shows that the percentage contributions of different sectors to overall GDSP growth. Looking at the growth performance from 2004-05 onwards, it is clear that manufacturing contributed significantly in normal years: 2005-06, 2006-07, 2009-10 to 2010-11. Sectors contributing more or less consistently well have been banking and insurance and real estate.

It is also observed from Chart 11 that the following 5 sub sectors: agriculture and allied, manufacture, transport, storage and communication, trade, hotels, and restaurants and construction contributed about 70 percent of over all GSDP growth in 2005-06, 2006-07 and 2010-11 (Table 10). They also jointly contributed more than 80 percent in 2009-10 and about 55 percent in 2011-12. But their joint contribution declined severely in the problem years: 2007-08, 2008-09, and initial three years of 12th Plan. As a result, the over all growth declined in those years. These major but problematic sectors need special attention.

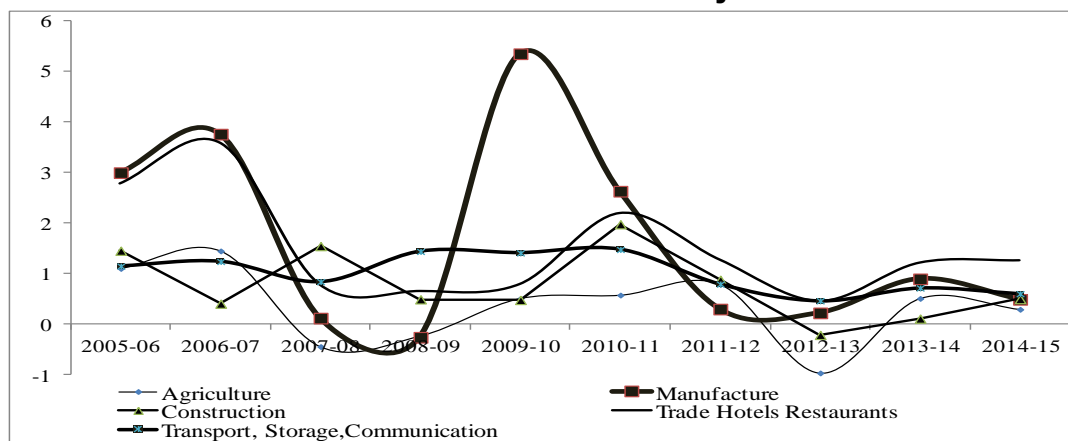
Table 10: Percentage Contribution of Sectors to GSDP Growth

Sectors/Sub-sectors	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15
1.Agriculture	7.90	9.52	-7.20	-4.18	4.72	4.40	10.67	-28.35	7.00	4.07
2.Forestry, Logging	0.31	-0.03	0.28	-0.09	0.16	0.13	0.16	0.46	0.25	0.27
3.Fishing	2.35	0.12	-0.89	0.16	0.44	0.43	0.30	0.19	0.06	0.63
4.Manufacture	21.47	24.70	1.98	-4.72	49.37	20.04	4.06	6.61	12.29	6.79
5.Mining and Quarrying	-0.26	0.18	0.11	-0.18	0.43	0.12	0.80	0.83	0.40	0.50
6.Construction	10.41	2.67	25.19	9.03	4.43	15.06	11.90	-6.21	1.53	6.87
7.Electricity, gas, water supply	0.31	0.45	-7.66	-15.66	0.58	0.91	0.71	17.86	-1.33	0.41
8.Trade Hotels Restaurants	19.91	23.55	12.79	12.02	7.32	16.72	17.27	13.57	16.65	17.40
9.Transport, Storage,Communication	8.24	8.15	13.74	26.39	13.03	11.26	10.74	13.72	9.84	8.34
10.Real Estate, Ownership Dwellings	11.41	11.51	29.30	29.00	7.99	9.35	22.79	47.64	28.35	33.56
11.Banking and Insurance	9.11	9.37	21.55	15.91	2.44	9.24	11.04	31.91	16.18	10.61
12.Other Services	7.79	6.63	10.18	16.26	8.88	9.77	9.16	6.30	6.26	8.86
13.Public Adminstraion	1.05	3.17	0.62	16.06	0.21	2.58	0.41	-4.54	2.52	1.71
GSDP	100	100	100	100	100	100	100	100	100	100
Major Problem Sectors (1+4+6+8+9)	67.93	68.60	46.51	38.54	78.87	67.47	54.63	-0.66	47.31	43.47

Source: Computed using basic data from CSO.

Chart 12 shows the growth contributions of these five major sub sectors since 2005-06. Among them, the industrial growth contribution is highly volatile, and trades, hotels and restaurants growth contribution is also volatile. As indicated earlier, these sectors are highly sensitive to global economies. They need special attention. The growth contribution of transport, storage and communication is more or less consistent. Given that agriculture is critical for food security in the state and around 50 percent of population is still rural, sufficient investments are necessary in agriculture sector to ensure growth in the sector overcoming climatic aberrations.

Chart 12: Growth Contributions of Five Major Sub Sectors



Manufacturing along with services is the engine of growth in the State. The growth of this sector is vital for generating jobs to absorb the working age population in the state. Uninterrupted power to industries, credit facilities to SMEs and incentives for new industries are essential to ensure a sustained industrial growth in Tamil Nadu.

Structure of GSDP

Like in many other Indian States, the structure of gross state domestic product (GSDP) in Tamil Nadu has been shifting away from agriculture towards non-agriculture, particularly services. The share of agriculture and allied sector in total GSDP (in 1999-00 prices) of Tamil Nadu in 1999-00 was about 17 percent and the shares of industry and services sectors were 30 percent and 53 percent respectively (not shown). As indicated in Table 11, the share of agriculture and allied sector declined to about 11 percent in 2004-05 (at 2004-05 prices) and further to 7.12 percent in 2014-15.

Table 11: Share of GSDP (GDP) in Tamil Nadu (India) at 2004-05 Prices

(Percent)

Sectors/Sub-Sectors	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15
Tamil Nadu											
Agriculture and Allied of which	11.12	11.06	10.87	9.79	9.07	8.70	8.27	8.46	7.28	7.28	7.12
Agriculture	9.60	9.39	9.41	8.45	7.80	7.50	7.14	7.38	6.21	6.26	6.11
Forestry, Logging	0.76	0.71	0.61	0.59	0.55	0.52	0.47	0.45	0.45	0.44	0.42
Fishing	0.76	0.96	0.85	0.75	0.72	0.69	0.66	0.63	0.62	0.58	0.58

(Contd Table ...)

(Contd Table ...)

Sectors/Sub-Sectors	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15
Industry of which	31.65	31.68	31.20	30.53	28.35	30.94	31.54	30.57	30.19	29.02	28.04
Manufacture	19.83	20.03	20.65	19.57	18.31	21.35	21.20	20.02	19.58	19.08	18.25
Mining and Quarry	0.75	0.62	0.56	0.54	0.50	0.49	0.45	0.47	0.49	0.48	0.48
Construction	8.97	9.15	8.30	9.27	9.26	8.79	9.52	9.68	9.16	8.64	8.52
Elec., Gas, Water supply	2.10	1.88	1.69	1.15	0.28	0.31	0.38	0.40	0.97	0.82	0.79
Services of which	57.23	57.26	57.94	59.68	62.58	60.36	60.19	60.96	62.53	63.70	64.84
Trade, Hotels and Restaurants	17.06	17.41	18.22	17.91	17.60	16.60	16.61	16.66	16.56	16.56	16.62
Transport, Storage, Communication	9.27	9.14	9.01	9.29	10.17	10.45	10.54	10.56	10.66	10.60	10.45
Real Estate, Ownership Dwellings	10.50	10.61	10.73	11.80	12.69	12.23	11.90	12.65	13.79	14.78	16.05
Banking and Insurance	7.24	7.47	7.72	8.52	8.90	8.27	8.38	8.57	9.33	9.80	9.85
Public administration	4.23	3.84	3.75	3.57	4.22	3.83	3.68	3.46	3.20	3.15	3.05
Tamil Nadu											
Other Services	8.93	8.79	8.50	8.60	9.00	8.98	9.07	9.08	8.99	8.80	8.81
GSDP	100	100	100	100	100	100	100	100	100	100	100
India											
Agriculture and Allied of which	19.03	18.27	17.37	16.81	15.77	14.64	14.59	14.37	17.72	17.22	16.11
Agriculture	16.04	15.46	14.69	14.29	13.36	12.35	12.42	12.26	0.00	0.00	0.00
Industry of which	27.93	27.99	28.65	28.74	28.13	28.27	27.92	28.22	32.32	31.68	31.37
Manufacture	15.25	15.34	16.00	16.14	15.78	16.17	16.17	16.28	18.31	18.08	18.08
Mining and Quarrying	2.86	2.65	2.60	2.46	2.36	2.30	2.25	2.11	3.05	3.01	2.88
Construction	7.70	7.93	7.99	8.10	7.99	7.85	7.62	7.91	8.61	8.28	8.09
Services of which	53.05	53.74	53.98	54.45	56.11	57.09	57.48	57.42	49.96	51.09	52.52
Trade, Hotel, Restaurants, Transp. Storage, Comm.	24.49	25.07	25.53	25.91	26.09	26.53	27.33	26.72	18.01	18.76	19.38
Finance, Real Estate Etc.	14.71	15.13	15.74	16.12	16.92	17.09	17.27	18.02	19.48	19.71	20.51
Public Adm, Def. and Others	13.84	13.54	12.70	12.42	13.09	13.47	12.89	12.68	12.47	12.62	12.63
GDPfc	100	100	100	100	100	100	100	100	100	100	100

Source (Basic Data): Central Statistical Organization, Government of India.

During 2004-05 to 2014-15, the share of industry declined marginally from 31.6 percent to 28 percent and the contribution of services sector increased from 57.2 percent to 64.84 percent. At all India level too, the share agriculture and allied sector in GDP factor cost declined from 19 percent in 2004-05 to 16.11 percent in 2014-15. The share of industrial sector increased slightly from 27.9 percent to 31.37 percent while the share of services remained the same (i.e., about 53 percent).

The continuous fall of agriculture share is a concern given the fact that growth of this sector is vital for food security in the state. Given limited availability of critical inputs of this sector, land and irrigation it is essential to concentrate on productivity, efficiency and technological progress for ensuring high growth of output of this sector.

Table 12 shows the employment details in Tamil Nadu (and India) in 2001 and 2011. As per 2001 census, Tamil Nadu had 2.78 crore workers out of a total population of 6.24 crore (i.e., work participation rate was 44.7 percent in 2001). In 2011, the work participation rate increased to 45.6 percent. Still 42 percent of the workers are in agriculture (as cultivators and agricultural labours). While 4.2 percent of workers are in industry, nearly 54 percent of workers are in other occupations.

There is a mismatch in the sectoral shares in output with the shares in employment in Tamil Nadu.

- Agriculture, which accounts for about 8 percent of output (in 2011) has 42 percent of workforce.
- Non-agriculture sector, which accounts for around 92 percent of output employs only 58 percent of workforce.

More or less a similar pattern with slightly varying magnitude exists at all India level.

Table 12: Occupational Breakdown: Tamil Nadu and India

Category	2001		2011	
	Persons	percent of workers	Persons	percent of workers
Tamil Nadu				
Cultivators	5116039	18.4	4248457	12.9
Agriculture Labours	8637630	31.0	9606547	29.2
Household Industry Workers	1499761	5.4	1364893	4.2
Other Workers	12624852	45.3	17664784	53.7
Total Workers	27878282	100.0	32884681	100.0
Work Participation Rate (percent)	44.66		45.58	

(Contd Table ...)

Category	2001		2011	
	Persons	percent of workers	Persons	percent of workers
Population	62425679		72147030	
Non Workers	34547397	55.34164394	39262349	
percent of Non Workers	55.34 percent		54.42 percent	
India				
Cultivators	127312851	31.7	118692640	24.6
Agriculture Labours	106775330	26.5	144329833	30.0
Household Industry Workers	16956942	4.2	18336307	3.8
Other Workers	151189601	37.6	200384531	41.6
Total Workers	402234724	100.0	481743311	100.0
Work Participation Rate (percent)	39.10 percent		39.80 percent	
Population	1028610115		1210569573	
Non Workers	626375391		728826262	
percent of Non Workers	60.90 percent		60.20 percent	

Source: Census of India, 2001 and 2011.

Concluding Remarks

This Chapter has reviewed the sectoral growth patterns and their contributions to the overall GSDP growth. The overall GSDP growth in Tamil Nadu declined to about 6 percent during the last three years (2012-13 to 2014-15) as compared its growth of about 9 percent in the 11th Plan period. However, this fall in GSDP growth of Tamil Nadu is consistent with the GDP growth of India, which also came down from about 8 percent to 6 percent. The fall in GSDP growth of Tamil Nadu in recent years was mainly due to fall in the contributions of 5 sub sectors-manufacturing, agriculture and allied, transport, storage and communications, trade, hotels and restaurants and construction sector. They jointly contributed more than 75 percent of the overall GSDP growth in Tamil Nadu in 2009-10. But their joint contribution was -0.66 percent of overall GSDP growth in 2012-13.

While the general economic slowdown in the country and across the world affected the growth of major sectors which in turn affected the over all growth in 2012-13, the following sector specific factors which aggravated the problem may also be noticed as: (i) bad monsoon affected agriculture; (ii) rising oil prices and power shortage affected the manufacturing; (iii) fall in manufacturing output and economic slow down affected the transport, storage and communication sector, trade, hotels and restaurants, and other services sectors in Tamil Nadu (due to inter sectoral linkages).

Chapter 4

REGIONAL GROWTH PERFORMANCE IN TAMIL NADU

In Chapter 2, we have seen substantial differences in economic performances of various Indian states. This suggests that there could be substantial differences in economic performances across regions within a state like Tamil Nadu. Therefore, in this Chapter, we look at spatial aspects of growth in terms of inter-district growth, and relative contribution of districts growth to over all growth of the state of Tamil Nadu. For this purpose, the overall GSDP is divided into agriculture and allied activities, industry and services and all 32 districts in Tamil Nadu are considered. Due to the non- availability of district level data for recent years, the analysis is restricted to cover the period: 2004-05 to 2011-12.

Special Economic Concentration

Table 13 shows 8-year average (2004-05 to 2011-12) share of districts in total GSDP of Tamil Nadu. Top three districts in terms of share in GSDP are: Chennai (7.9 percent), Thiruvallur (6.2 percent) and Kancheepuram (6.2 percent). These top 3 districts along with the following 7 districts contribute nearly 53 percent of total GSDP produced in the state: Coimbatore, Vellore, Salem, Trichy, Thiruppur, Madurai and Erode. The poor three districts in terms of their share in GSDP are: Perambalur, Ariyalur and The Nilgiris. They jointly contribute only 1.68 percent of total GSDP generated in Tamil Nadu.

Table 13: District-wise Shares in GSDP: 2004-05 to 2011-12

Districts	8-Year Average Contribution in Overall GSDP of Tamil Nadu (percent)				Share of Sectors in Total GDDP (8-year average) in percent		
	Agriculture and Allied	Industry	Services	GDDP	Agriculture and Allied	Industry	Services
Chennai	0.94	4.03	11.02	7.92	1.12	15.67	83.21
Kancheepuram	2.39	7.18	6.24	6.17	3.66	35.83	60.52
Thiruvallur	2.54	7.33	6.15	6.17	3.88	36.53	59.59
Vellore	4.19	6.50	5.27	5.55	7.13	36.04	56.82
Thiruvannamalai	3.91	1.93	2.01	2.16	17.08	27.44	55.49
Cuddalore	4.20	2.68	3.17	3.11	12.73	26.48	60.79
Villupuram	5.20	1.87	2.55	2.59	18.95	22.26	58.79
Thanjavur	3.85	1.44	3.04	2.63	13.82	16.88	69.30
Nagapattinam	2.86	1.37	1.50	1.59	17.05	26.59	56.36
Thiruvarur	2.23	0.44	1.10	1.01	20.96	13.32	65.72
Salem	4.43	5.25	4.32	4.62	9.07	35.00	55.93
Namakkal	5.90	2.88	2.37	2.86	19.46	30.98	49.56
Dharmapuri	3.53	1.28	1.84	1.82	18.28	21.53	60.19
Krishnagiri	2.86	2.65	2.46	2.56	10.56	31.85	57.59
The Nilgris	2.07	0.53	1.08	1.00	19.53	16.16	64.31
Thiruchirappalli	3.21	3.06	5.19	4.34	6.97	21.65	71.38
Karur	1.65	1.64	1.61	1.62	9.58	31.10	59.32
Perambalur	0.95	0.15	0.26	0.29	31.00	16.16	52.83
Ariyalur	1.13	0.25	0.34	0.39	27.56	19.59	52.85
Pudukkottai	2.78	1.31	1.59	1.62	16.26	24.98	58.77
Coimbatore	3.56	7.79	5.46	6.00	5.60	39.95	54.45
Thiruppur	3.26	5.55	3.78	4.27	7.21	39.96	52.83
Erode	6.33	4.54	3.62	4.16	14.38	33.60	52.02
Madurai	2.47	3.46	4.87	4.21	5.53	25.28	69.18
Theni	3.01	0.56	1.14	1.14	24.93	15.23	59.84
Dindigul	4.55	2.52	2.51	2.70	15.88	28.63	55.49
Ramanathapuram	2.52	0.97	1.34	1.34	17.78	22.41	59.81
Sivagangai	1.51	1.06	1.53	1.38	10.31	23.62	66.07
Virudhunagar	2.03	6.50	2.79	3.86	4.97	51.78	43.25
Thirunelveli	3.94	5.10	3.97	4.32	8.61	36.34	55.05
Thoothukudi	3.30	2.67	3.18	3.03	10.27	27.09	62.64
Kanniyakumari	2.73	5.50	2.72	3.58	7.20	47.28	45.52
Tamil Nadu	100	100	100	100	9.44	30.76	59.79

Top 3 districts in terms of their share in GSDP agriculture are: Erode (6.33 percent), Namakkal (5.9 percent) and Villupuram (5.2 percent) and bottom 3 in their contribution to GSDP agriculture of Tamil Nadu are: Perambalur, Chennai and Ariyalur. It is noted that in both Perambalur and Ariyalur, nearly 30 percent of their GSDP comes from agriculture. Still they contribute less to state agriculture GSDP.

Coimbatore ranks first in terms of share in Industrial GSDP (7.79 percent), followed by Thiruvallur (7.33 percent) and Kancheepuram (7.18 percent). Poorer districts with lowest industrial contributions are: Perambalur (0.15 percent), Ariyalur (0.25 percent) and Thiruvarur (0.44 percent).

About 11 percent of Services GSDP comes from Chennai, followed by Kancheepuram (6.24 percent) and Thiruvallur (6.15 percent). Perambalur, Ariyalur and The Nilgiris are the bottom 3 districts in terms of their contribution to Services GSDP.

Table 13 also shows that Perambalur (31 percent), Ariyalur (27.6 percent) and Theni (25 percent) are the top 3 districts in having the largest share of agriculture and allied activities in their GDDP. In Virudhunagar nearly 52 percent of GDDP comes from industry, followed by Kanniyakumari (47.3 percent) and Thiruppur (40 percent). Nearly 83 percent of GDDP comes from service sector in Chennai district. Other top two districts with larger services share are Thiruchirappalli (71.4 percent) and Thanjavur (69.3 percent).

Index of Concentration

The Herfindahl index is a measure of how concentrated an industry is. An industry with few competitors will have a high level of concentration, while many competitors will result in low concentration. This is also known as Herfindahl-Hirschman Index or HHI. As there are 32 districts in Tamil Nadu, let the sectoral share for each district be given as a_1, a_2, \dots, a_{32} and a_i is the sectoral share of each district. We also know that the $\sum a_i = 1$, where $i=1,2,\dots,32$. The formula for calculating the Herfindahl index is: $HHI = \sum a_i^2$. As in previous Chapter, we calculate the Herfindahl index for various sub sectors for the years from 2004-05 to 2011-12:

1. Agriculture and Allied
2. Mining and Quarrying
3. Manufacturing
4. Construction
5. Electricity, Gas and Water Supply
6. Storage

7. Communication
8. Transport, Hotels and Restaurants
9. Banking and Insurance
10. Real Estate, and Ownership Dwellings
11. Public Administration
12. Other Services

As we calculate the Herfindahl index for each sector in Tamil Nadu, these indices are useful to find out which sector is concentrated more in the state.

- A HHI index below 0.01 indicates a highly competitive index.
- A HHI index below 0.1 indicates an unconcentrated index.
- A HHI index between 0.1 to 0.18 indicates moderate concentration.
- A HHI index above 0.18 indicates high concentration.

Table 14 provides the HHIs for various sectors for the years 2004-05 to 2011-12. Mining and Quarrying sector is highly concentrated in Tamil Nadu and there is not much competition in that sector. All other sectors such as the Manufacturing, Electricity and Water supply and the service sector are not much concentrated. The Agriculture sector is also less concentrated and there is much competition in this sector. From this we can see that majority of the people in the state depend on agriculture, other services and trade, hotels and restaurants for their livelihood. Thus, mining and quarrying is the only one high spatial concentrated economic sector in the state and all other sectors are relatively better spatially spread out.

**Table 14: Concentration of Economic Activity Measured by Herfindahl Index:
District-wise Sector Wise Analysis**

Sectors	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12
Agriculture and Allied	0.038	0.038	0.038	0.040	0.039	0.040	0.040	0.039
Industry	0.046	0.047	0.047	0.047	0.048	0.050	0.050	0.050
Mining and Quarrying	0.382	0.360	0.351	0.354	0.355	0.330	0.342	0.344
Manufacture	0.053	0.055	0.054	0.056	0.057	0.059	0.060	0.061
Electricity, Gas and Water Supply	0.048	0.048	0.049	0.049	0.049	0.049	0.050	0.050
Construction	0.045	0.046	0.047	0.048	0.049	0.050	0.052	0.053
Services	0.047	0.047	0.046	0.046	0.046	0.046	0.046	0.046
Trade, Hotel, Restaurants	0.044	0.044	0.044	0.044	0.044	0.044	0.044	0.044
Storage	0.052	0.053	0.052	0.056	0.058	0.058	0.061	0.065

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Sectors	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12
Communication	0.050	0.049	0.049	0.049	0.049	0.049	0.049	0.049
Banking and Insurance	0.051	0.051	0.050	0.049	0.049	0.048	0.048	0.047
Real Estate, Ownership etc	0.051	0.053	0.054	0.054	0.055	0.057	0.058	0.061
Public Administration	0.044	0.045	0.045	0.045	0.045	0.046	0.046	0.046
Other Services	0.043	0.043	0.043	0.043	0.042	0.042	0.042	0.042

Inter District Growth Profile

Table 15 provides a profile of sectoral growth rates and the overall GDDP growth for all districts during 2005-06 to 2011-12. All figures relate to the GDDP at 2004-05 prices. For the purpose of this analysis, we have divided GDDP in each district into three major sectors: (i) Agriculture and Allied Services, (ii) Industry and (iii) Services.

The overall GSDP of Tamil Nadu grew at an average rate of 10.3 percent during 2-005-06 to 2011-12. Kancheepuram (14.7 percent) registered the highest average GDDP growth, followed by Krishnagiri (14.38 percent) and Thiruvallur (12.75 percent). Namakkal, Dharmapuri, Thiruchirappalli, Karur, Coimbatore, Sivagangai, Virudhunagar and Kanniyakumari also recorded a double-digit growth rate. The districts that registered the low average GDDP growth were: Ariyalur (5.61 percent), Theni (5.87 percent), and Perambalur (6.95 percent).

Agriculture and allied sector recorded an average growth rate of 6.22 in Tamil Nadu during 2005-06 to 2011-12. The top 3 districts in terms of high growth of agriculture and allied sector were: Coimbatore (20.42 percent), Nagapattinam (18.02 percent), and Thiruvarur (17.33 percent). Thiruppur also registered a double-digit growth (16.71 percent). The bottom 3 districts with relatively low growth of agriculture sector were: Cuddalore (-1.16 percent), The Nilgiris (1.87 percent) and Kanniyakumari (2.79 percent).

The industrial growth was 9.95 percent in the state. Top 3 districts with the highest growth of this sector were: Kancheepuram (18.02 percent), Kanniyakumari (13.95 percent) and Krishnagiri (12.99 percent). Other districts recorded a double-digit growth were: Karur, Vellore, Thiruvallur, Thiruvannamalai, Dindigul, Madurai, Coimbatore and Thiruppur. The bottom 3 districts with low industrial growth were: The Nilgiris (1.72 percent), Chennai (2.56 percent) and Theni (2.68 percent).

Table 15: 7 Year Average Annual Growth of GDP and Major Sectors of Districts in Tamil Nadu (2005-06 to 2011-12) in 2004-05 prices

Districts	Agri. and Allied	RA NK	Indu-stry	RA NK	Ser-vices	RA NK	GDDP	RA NK
Chennai	2.88	28	2.56	31	8.66	28	7.52	27
Kancheepuram	4.30	23	18.02	1	13.68	4	14.70	1
Thiruvallur	2.89	27	11.93	6	14.38	3	12.75	3
Vellore	6.24	18	10.74	9	11.87	9	10.92	8
Thiruvannamalai	7.10	15	10.74	8	10.62	19	9.93	15
Cuddalore	-1.16	32	7.19	24	13.05	5	9.25	18
Villupuram	3.82	25	10.50	12	10.10	23	8.87	23
Thanjavur	6.71	16	7.70	22	10.54	20	9.34	17
Nagapattinam	18.02	2	4.62	27	8.78	27	8.33	25
Thiruvarur	17.33	3	4.12	29	8.16	29	8.52	24
Salem	7.99	12	7.44	23	11.16	13	9.44	16
Namakkal	9.01	7	8.46	21	11.75	11	10.07	13
Dharmapuri	8.17	11	9.79	17	14.74	2	12.32	6
Krishnagiri	8.91	8	12.99	3	16.51	1	14.38	2
The Nilgris	1.87	31	1.72	32	11.13	14	7.44	29
Thiruchirappalli	4.51	22	11.00	7	12.98	6	11.84	7
Karur	8.52	10	10.29	13	11.94	8	10.86	10
Perambalur	8.66	9	6.78	26	7.02	31	6.95	30
Ariyalur	7.40	14	4.18	28	5.96	32	5.61	32
Pudukkotai	6.44	17	8.78	19	10.43	21	9.02	22
Coimbatore	20.42	1	10.71	10	11.39	12	10.88	9
Thiruppur	16.71	4	12.47	4	11.85	10	12.32	5
Erode	9.25	5	8.48	20	10.19	22	9.16	20
Madurai	3.66	26	12.26	5	10.94	16	10.42	11
Theni	6.00	19	2.68	30	7.18	30	5.87	31
Dindigul	4.83	21	10.71	11	9.61	24	9.06	21
Ramanathapuram	2.88	29	9.86	15	9.13	26	7.50	28
Sivagangai	7.77	13	9.82	16	11.07	15	10.13	12
Virudhunagar	9.07	6	9.88	14	10.85	17	10.06	14
Thirunelveli	4.11	24	9.14	18	10.62	18	9.19	19
Thoothukudi	5.50	20	6.85	25	9.39	25	8.07	26
Kanniyakumari	2.79	30	13.95	2	12.39	7	12.35	4
Tamil Nadu	6.22		9.95		11.28		10.30	

The services sector of Tamil Nadu grew at 11.28 percent. The highest growth of services was recorded in Krishnagiri (16.51 percent), Dharmapuri (14.74 percent) and Thiruvallur (14.38 percent). The bottom 3 districts having low services sector growth were: Ariyalur (5.96 percent), Perambalur (7.02 percent) and Theni (7.18).

Relative Contribution of Regional Growth to Aggregate Growth

In this Section, we look at the relative contribution of the regional (district) growth rates to overall growth rate by decomposing growth as a weighted sum of regional growth rates with weights being equal to the respective shares of the district in the overall GSDP. The weights change every year as explained in previous Chapter. There are 32 regions/districts in Tamil Nadu.

The growth decomposition results in Table 16 shows that Thiruvallur district contributed 1.07 percent in the total GSDP growth of 13.96 percent in 2005-06, followed by Thirunelveli (0.95 percent), and Chennai and Coimbatore each contributing 0.85 percent. Thus these 4 districts contributed 3.72 percent in the 13.96 percent growth of GSDP (i.e., they jointly contributed 25.84 percent of total GSDP growth). But in the initial 2 years of 11th Plan (2007-08 and 2008-09), they jointly contributed only 2.15 percent and 0.94 percent growth in the over all growth of 6.13 percent and 5.45 percent in those years. These four districts along with the following nine districts contributed more than 60 percent of GSDP growth in all years: (i) Kancheepuram, (ii) Vellore, (iii) Salem, (iv) Kanniyakumari, (v) Thiruchirappalli, (vi) Erode, (vii) Virudhunagar, (viii) Madurai, and (ix) Thiruppur (Table 17).

Table 16: Contributions of Regional Growths to GSDP Growth of Tamil Nadu (Percent)

Districts	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12
Chennai	0.85	1.10	0.47	0.39	0.36	0.79	0.33
Kancheepuram	0.76	1.05	0.39	0.91	0.85	1.28	0.83
Thiruvallur	1.07	0.89	0.55	0.43	1.19	0.72	0.50
Vellore	0.70	0.90	0.39	0.26	0.74	0.77	0.43
Thiruvannamalai	0.29	0.25	0.23	0.08	0.14	0.30	0.20
Cuddalore	0.23	0.53	0.18	0.13	0.33	0.40	0.22
Villupuram	0.28	0.33	0.19	0.13	0.23	0.28	0.18
Thanjavur	0.36	0.39	0.14	0.15	0.13	0.33	0.24
Nagapattinam	0.22	0.38	-0.11	0.06	0.17	0.10	0.12
Thiruvarur	0.11	0.23	-0.01	0.01	0.08	0.02	0.15
Salem	0.65	0.68	0.30	0.24	0.31	0.59	0.30
Namakkal	0.38	0.56	0.19	0.12	0.31	0.31	0.15
Dharmapuri	0.28	0.30	0.19	0.10	0.16	0.31	0.20
Krishnagiri	0.45	0.37	0.20	0.22	0.44	0.49	0.29
The Nilgris	0.05	0.12	0.06	0.07	0.08	0.10	0.05
Thiruchirappalli	0.63	0.65	0.36	0.44	0.59	0.52	0.34
Karur	0.20	0.32	0.02	0.16	0.22	0.16	0.14

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Districts	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12
Perambalur	0.01	0.03	0.00	0.01	0.01	0.03	0.05
Ariyalur	0.05	0.04	-0.01	0.04	0.01	0.01	0.02
Pudukkottai	0.26	0.17	0.09	0.06	0.17	0.16	0.14
Coimbatore	0.85	0.91	0.62	0.22	0.72	0.96	0.26
Thiruppur	0.59	0.65	0.44	0.23	0.70	0.70	0.29
Erode	0.62	0.57	0.41	-0.21	0.30	0.71	0.27
Madurai	0.60	1.09	-0.20	0.28	0.41	0.55	0.30
Theni	0.13	0.09	0.02	0.05	0.09	0.06	0.05
Dindigul	0.28	0.40	0.11	0.18	0.25	0.35	0.16
Ramanathapuram	0.16	0.30	-0.07	0.06	0.04	0.14	0.09
Sivagangai	0.26	0.08	0.09	0.11	0.11	0.19	0.13
Virudhunagar	0.61	0.68	-0.05	0.13	0.61	0.51	0.23
Thirunelveli	0.95	0.25	0.51	0.00	0.38	0.47	0.24
Thoothukudi	0.44	0.47	0.01	0.13	0.27	0.24	0.20
Kanniyakumari	0.64	0.43	0.41	0.26	0.40	0.59	0.30
Tamil Nadu	13.96	15.21	6.13	5.45	10.83	13.12	7.39

It is noticed that relative contributions of Chennai, Thiruchirappalli and Thanjavur districts with higher share of services sector declined significantly in the recession years 2007-08 and 2008-09. Similarly, the relative contributions of districts with higher share of industries like Virudhunagar, Coimbatore and Kanniyakumari also declined dramatically in those recession years.

Table 17: Percentage Contribution of Districts to GSDP Growth

Districts	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12
Thiruvallur	7.64	5.84	8.95	7.93	11.01	5.49	6.71
Thirunelveli	6.80	1.64	8.35	0.05	3.51	3.58	3.26
Chennai	6.06	7.26	7.69	7.18	3.37	6.05	4.45
Coimbatore	6.06	5.95	10.06	4.00	6.63	7.29	3.50
Kancheepuram	5.47	6.91	6.33	16.63	7.82	9.77	11.23
Vellore	5.05	5.94	6.31	4.81	6.85	5.88	5.86
Salem	4.69	4.47	4.92	4.44	2.84	4.52	4.07
Kanniyakumari	4.56	2.81	6.75	4.70	3.66	4.49	4.07
Thiruchirappalli	4.52	4.26	5.92	7.98	5.49	3.98	4.63
Erode	4.42	3.73	6.71	-3.91	2.77	5.41	3.64
Virudhunagar	4.34	4.46	-0.75	2.44	5.62	3.85	3.17
Madurai	4.27	7.16	-3.29	5.09	3.82	4.21	4.08
Thiruppur	4.23	4.24	7.17	4.24	6.45	5.31	3.95
Contribution of Top 13 Dts.	68.09	64.68	75.12	65.57	69.85	69.83	62.61
Krishnagiri	3.20	2.46	3.28	4.09	4.10	3.74	3.93

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Districts	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12
Thoothukudi	3.14	3.10	0.17	2.35	2.51	1.86	2.68
Namakkal	2.73	3.70	3.04	2.12	2.91	2.35	2.00
Thanjavur	2.59	2.57	2.30	2.72	1.18	2.49	3.22
Thiruvannamalai	2.11	1.65	3.74	1.50	1.32	2.30	2.73
Villupuram	2.04	2.19	3.15	2.47	2.11	2.11	2.42
Dharmapuri	2.02	1.97	3.04	1.83	1.51	2.33	2.69
Dindigul	1.97	2.62	1.73	3.39	2.35	2.66	2.21
Contribution of 8 Middle Dt.	19.79	20.26	20.45	20.46	17.99	19.84	21.89
Sivagangai	1.89	0.51	1.52	2.03	1.04	1.48	1.72
Pudukkottai	1.86	1.09	1.42	1.10	1.53	1.18	1.94
Cuddalore	1.63	3.51	2.95	2.43	3.05	3.02	2.96
Nagapattinam	1.57	2.49	-1.77	1.05	1.60	0.73	1.62
Karur	1.43	2.11	0.34	2.90	2.03	1.21	1.92
Ramanathapuram	1.15	1.97	-1.12	1.18	0.32	1.04	1.18
Theni	0.92	0.61	0.37	0.93	0.86	0.45	0.63
Thiruvarur	0.82	1.50	-0.14	0.26	0.76	0.16	1.98
The Nilgris	0.39	0.77	1.04	1.24	0.79	0.75	0.62
Ariyalur	0.34	0.27	-0.20	0.67	0.10	0.10	0.32
Perambalur	0.11	0.22	0.02	0.18	0.07	0.20	0.63
Contribution of Poor 11 Dts	12.12	15.06	4.43	13.96	12.16	10.33	15.50
Tamil Nadu	100.0	100.0	100.0	100.0	100.0	100.0	100.0

The joint contributions of the following 11 districts: Sivagangai, Pudukkottai, Cuddalore, Nagapattinam, Karur, Ramanathapuram, Theni, Thiruvarur, The Nilgiris, Ariyalur, and Perambalur ranged between 4.43-15.5 percent of the growth of GSDP of Tamil Nadu during 2005-06 to 2011-12. These districts need special attention.

Concluding Remarks

This Chapter has reviewed the regional growth pattern and the contributions of various regions to the overall GSDP growth. The analysis is restricted to cover the period 2004-05 to 2011-12 due to unavailability of the regional level data for recent years. While Chennai, Thiruvallur, and Kancheepuram are top 3 districts, jointly contributing about 20 percent of total GSDP produced in the state, the poorer districts-Perambalur, Ariyalur and The Nilgiris jointly contributed only 1.68 percent. Erode, Namakkal and Villupuram were the top 3 in terms of higher contribution to GSDP agriculture of Tamil Nadu. Coimbatore, Thiruvallur and Kancheepuram jointly accounted for about 22 percent of Industry GSDP of the state while Chennai, Kancheepuram and Thiruvallur jointly accounted for about 23.4 percent of total services GSDP of the Tamil Nadu.

Bottom 3 districts in terms of low contribution to (i) GSDP agriculture of the State are: Perambalur, Chennai and Ariyalur; (ii) GSDP industry are Perambalur, Ariyalur and Thiruvarur; and (iii) GSDP services are: Perambalur, Ariyalur and The Nilgiris. It was observed that in the poorer districts like Perambalur (31.1 percent), Ariyalur (27.6 percent) and Theni (24.9 percent), the share of agriculture and allied activities was the highest in their respective GDDP.

Kancheepuram (14.7 percent), Krishnagiri (13.4 percent), and Thiruvallur (12.7 percent) are top 3 districts in high average GDDP growth. Top 3 in terms of high average industrial growth were: Kancheepuram (18 percent), Kanniyakumari (14 percent) and Thiruvallur. Top 3 in high services sector growth were: Krishnagiri (16.5 percent), Dharmapuri (14.7 percent) and Thiruvallur (14.4 percent). Coimbatore (20 percent), Namakkal (18 percent), and Thiruvarur (12 percent) were the top 3 in high agriculture growth.

The growth decomposition analysis indicate that the following 11 districts: Sivagangai, t, Cuddalore, Nagapattinam, Karur, Ramanathapuram, Theni, Thiruvarur, The Nilgiris, Ariyalur, and Perambalur jointed contributed only about 12 percent (4.43 percent) of the growth of GSDP of Tamil Nadu in 2009-10 (in 2007-08). These districts need special attention.

Chapter 5

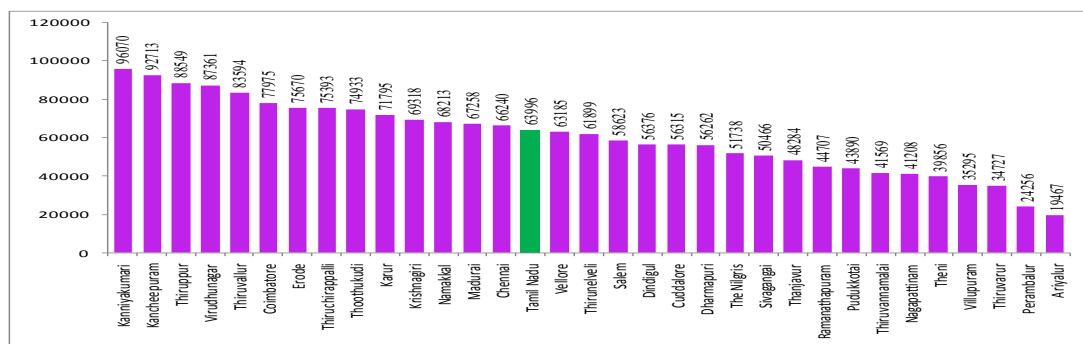
DETERMINANTS OF ECONOMIC GROWTH

In the previous Chapter, we have seen that there are substantial differences in economic performance across districts in Tamil Nadu. This suggests that many of the essential determinants of economic performance are to be found at the regional level. Therefore, in this Chapter, an attempt is made to identify the determinants of economic growth in Tamil Nadu. Specifically we relate the per capita income growth of the districts of Tamil Nadu with various factors like share of agriculture, share of industry, share of services, initial per capita income, etc.

Per Capita Income Growth: Inter-District Profile

There are 32 districts in Tamil Nadu (see Chart 13). Kanniyakumari (Rs. 96070) and Kancheepuram (Rs. 92713) ranked first and second in per capita (Gross District Domestic Product) income (real) in 2011-12 (this is the latest year for which the district wise income data are available). Thiruvallur (Rs. 88549) obtained third rank. Ariyalur (Rs. 19467), Perambalur (Rs. 24256), and Villupuram (Rs. 34727) districts were the poorest, occupying the last three ranks.

Chart 13: Per Capita Income (2004-05 prices) of Districts in Tamil Nadu in 2011-12



It is noted that the per capita income of the top ranked (Kanniyakumari) district is about 4.94 times larger than that of the poorest (Ariyalur) district (i.e., the latter is only 20.26 per cent of the former). The per capita income of the state was about Rs. 63996 in 2011-12. In 18 districts (out of 32), the per capita income was below the per capita income of the state (Chart 13).

It is noted that almost all the poorest districts fall in the eastern part of the state below Kancheepuram and Thiruvallur. The districts with the highest incomes (above the state average) are in 3 segments: at the top in the middle of the southern part (Kanniyakumari, Virudhunagar, Thoothukudi, Madurai, and Thiruchirappalli), in the east (Thiruvallur, Chennai, and Kancheepuram) and in the northwestern part (Thiruppur, Coimbatore, Namakkal, Karur, Erode and Krishnagiri). The poorest districts: Ariyalur, Perambalur and Thiruvallur were adjacent to the richer district Thiruchirappalli and the other poorest districts Thiruvannamalai and Villupuram are adjacent to the two richer districts (Thiruvallur and Kancheepuram).

It seems that prosperity did not spread to the neighboring poorer districts from richer districts like Thiruvallur, Kancheepuram, Virudhunagar and Thiruchirappalli. Since 18 out of 32 districts have a per capita income below the state average and the per capita income of the poorest district is only 20 percent of that of the richest district, we may infer that the inter-district distribution of income is much skewed. More results on economic inequality are discussed in Section 5.2.

Table 18 shows the growth rate of Per Capita income in various districts of Tamil Nadu from 2005-06 to 2011-12. The fastest growing districts were: Kancheepuram (13.32 percent), Krishnagiri (13.03 percent) and Kanniyakumari (12.3 percent) while the lowest growing districts were: Ariyalur (4.85 percent), Theni (5.87 percent) and Perambalur (6.81 percent).

Table 18: Per Capita Income Growth in Tamil Nadu Districts (2005-06 to 2011-12)

Districts	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	Avg.	11th Plan
Chennai	8.74	12.20	4.85	3.94	3.68	9.52	3.65	6.65	5.13
Kancheepuram	12.71	18.01	5.62	14.72	12.34	18.79	11.04	13.32	12.50
Thiruvallur	16.97	13.20	7.49	5.34	17.50	9.07	5.91	10.78	9.06
Vellore	11.75	15.57	6.02	3.75	12.49	12.71	6.74	9.86	8.34
Thiruvannamalai	12.87	11.06	10.44	3.42	6.31	14.12	9.32	9.65	8.72
Cuddalore	6.50	16.92	5.44	3.94	10.40	12.57	6.89	8.95	7.85
Villupuram	9.90	12.11	7.05	4.78	8.41	10.48	6.86	8.51	7.52
Thanjavur	12.70	13.90	4.84	5.19	4.44	12.58	9.15	8.97	7.24
Nagapattinam	12.39	21.93	-6.40	3.23	10.78	5.85	7.86	7.95	4.26
Thiruvallur	10.19	21.26	-1.01	1.16	8.06	2.04	16.45	8.31	5.34
Salem	12.78	13.36	5.52	4.28	5.71	12.28	5.88	8.54	6.73
Namakkal	11.73	18.17	4.77	2.41	9.29	9.08	3.77	8.46	5.87
Dharmapuri	15.09	15.77	9.19	4.17	7.62	15.61	9.43	10.98	9.21
Krishnagiri	18.57	14.53	7.23	7.97	16.44	17.19	9.25	13.03	11.62
The Nilgiris	4.37	10.84	6.05	6.42	8.08	9.68	4.50	7.14	6.95
Thiruchirappalli	14.79	15.04	8.16	9.67	12.83	10.97	7.16	11.23	9.76
Karur	11.92	19.78	0.75	9.54	12.92	9.01	8.31	10.32	8.11

(Contd Table ...)

(Contd Table ...)

Districts	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	Avg.	11th Plan
Perambalur	4.02	10.06	0.14	3.18	2.57	9.69	18.04	6.81	6.72
Ariyalur	9.25	8.50	-3.57	8.70	1.99	2.85	6.19	4.85	3.23
Pudukkottai	14.51	8.94	4.72	3.13	9.79	9.21	8.80	8.44	7.13
Coimbatore	13.10	14.08	9.20	2.36	10.70	14.51	3.04	9.57	7.96
Thiruppur	13.43	14.71	9.58	4.25	15.27	14.44	5.28	10.99	9.76
Erode	12.61	11.53	8.23	-5.92	6.25	16.94	5.44	7.87	6.19
Madurai	13.78	25.49	-4.70	6.40	9.60	13.05	7.03	10.09	6.27
Theni	9.50	7.13	1.85	4.42	8.24	5.40	4.55	5.87	4.89
Dindigul	9.02	13.88	3.38	6.43	8.92	12.57	5.72	8.56	7.40
Ramanathapuram	10.81	20.78	-4.51	4.78	2.68	11.04	7.26	7.55	4.25
Sivagangai	18.26	4.96	6.62	7.88	7.87	14.11	9.07	9.83	9.11
Virudhunagar	14.53	16.17	-1.86	2.81	15.72	12.30	5.39	9.29	6.87
Thirunelveli	20.80	4.76	11.37	-0.37	8.39	10.70	5.43	8.72	7.10
Thoothukudi	12.86	14.00	-0.05	3.81	8.65	7.90	6.67	7.69	5.40
Kanniyakumari	19.12	12.25	12.22	7.16	10.95	16.28	8.12	12.30	10.95
Tamil Nadu State	13.05	14.33	5.35	4.71	10.08	12.38	6.72	9.52	7.85

Even in the top growing districts such as Kanniyakumari, Krishanagiri and Kancheepuram, the growth declined during the recession years- 2007-08 and 2008-09.

It is also observed from Table 18 that only in 13 districts (Madurai, Thiruppur, Karur, Dharmapuri, Vellore, Thiruvannamalai, Coimbatore, Sivagangai, Thiruvallur, Thiruchirapalli, Krishanagiri, Kancheepuram and Kanniyakumari), the average per capita income growth was higher than the state average growth of 9.92 percent. In the remaining 19 districts the average growth of per capita income was lower than the state average growth. It is noticed that some of low-income districts like Dharmapuri, Sivagangai, Vellore, and Thiruvannamalai grew faster, indicating the growth convergence.

Economic Growth and Spatial Inequality

Many argue that spatial inequality increases during periods of rapid economic growth (Shankar and Shah, 2003).¹⁰ Krugman (1991) argued that industrial regions / clusters will trend to grow more rapidly than agricultural regions leading to better economic performance.¹¹ The resulting spatial inequality (among regions) may cause social and political instability. It would, therefore be interesting to see if inter district inequality has increased during a period of rapid economic growth in Tamil Nadu.

¹⁰ Shankar, Raja and Anwar Shah (2003) "Bridging the Economic Divide within Countries: A Score card on the Performance of Regional Policies in Reducing Regional Income Disparities", *World Development*, Vol.13, No.8, pp 1421-1441.

¹¹ Krugman.P (1991) "Increasing Returns and Economic Geography", *Journal of Political Economy*, Vol.99, No.3, pp 483-499.

Table 19 provides the computed values of various (selective) inequality coefficients using district level per capita income data from 2004-05 to 2011-12. These parameters indicate the following: (i) The maximum-minimum ratio of Per Capita GDDP increased continuously from 3.378 in 2004-05 to 4.935 in 2011-12; (ii) The coefficient of variation (ratio of standard deviation to the mean) increased from 0.276 in 2004-05 to 0.328 in 2011-12; and (iii) Other measures of inequality such as the Gini Index¹² and the Theil Index¹³ also increased from 2004-05 to 2011-12.

Table 19: Measures of Per Capita GDDP Inequality

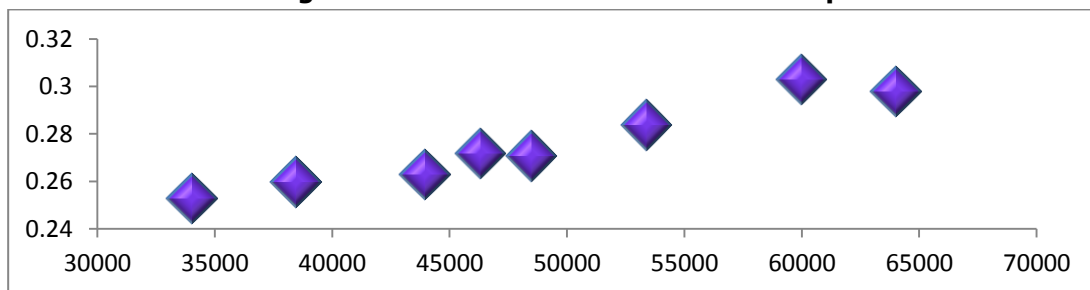
Year	Max/Min (MMR)	Coefficient of Variation (CV)	Weighted CV (WCV)	Gini Index	Weighted Gini Index	Theil Index
2004-05	3.378	0.276	0.253	0.160	0.141	0.085
2005-06	3.542	0.286	0.260	0.166	0.145	0.085
2006-07	3.792	0.291	0.263	0.169	0.146	0.086
2007-08	3.998	0.301	0.272	0.175	0.150	0.082
2008-09	3.941	0.301	0.271	0.174	0.150	0.083
2009-10	4.287	0.320	0.284	0.186	0.161	0.087
2010-11	4.847	0.334	0.303	0.194	0.168	0.087
2011-12	4.935	0.328	0.298	0.190	0.165	0.088

Chart 14 plots the coefficient of variation against the average per capita GSDP (in constant prices) during 2004-05 to 2011-12. The correlation coefficient is 0.97 clearly demonstrating that inter district inequality is widening with economic growth.

¹² Gini Index: Ratio of the area that lies between the line of equality and the Lorenz curve over the total area under the line of equality.

¹³ Theil Index, $T = \sum_i x_i \log\left(\frac{x_i}{q_i}\right)$ where x_i and q_i are the GDP share and population share of region i .

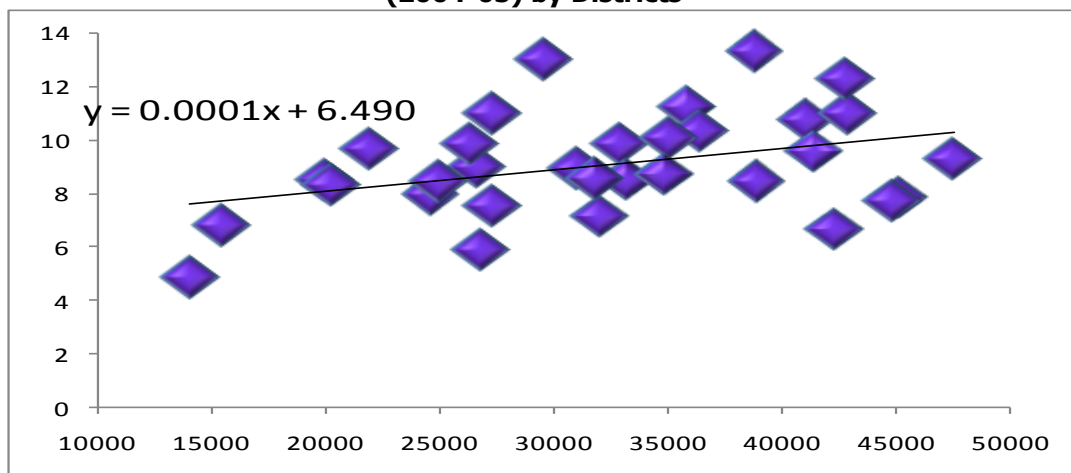
Chart 14: Weighted Coefficient of Variation Vs Per Capita GSDP



Determinants of Per Capita Income

In this section, we attempt to identify the factors determining per capita income growth of districts in Tamil Nadu using simple plotting procedure. Chart 15 plots the average rate of growth of per capita income of districts in Tamil Nadu during 2005-06 to 2011-12 against the initial per capita income in districts in 2004-05 (as suggested in Porter, 2003). It is expected that the initial economic conditions will boost economic growth and so a positive relationship with per capita income growth.

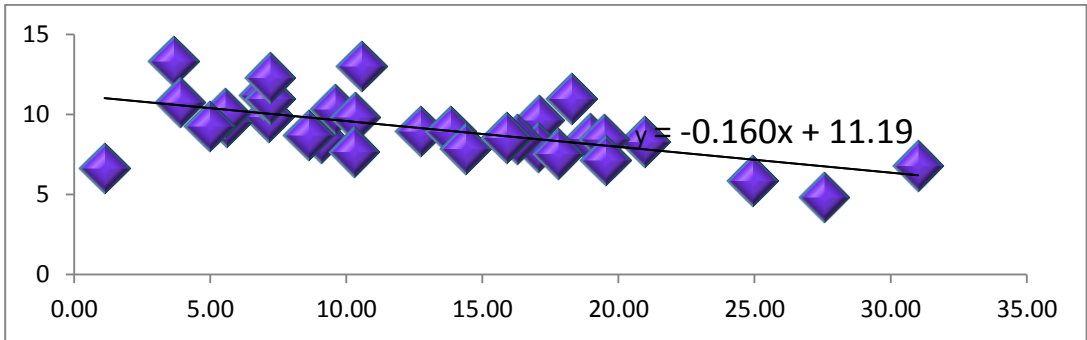
Chart 15: Per Capita GDDP Growth (2005-12) Vs. Initial Per Capita GDDP (2004-05) by Districts



It seems that those districts with comparatively higher initial per capita income in 2004-05 experienced more rapid growth; the regression coefficient was 0.0001, indicating that on an average ten thousand rupees increase in initial per capita income leads to 1 percent increase in per capita income growth rate in Tamil Nadu districts.

Chart 16 plots the average rate of growth of per capita income of districts in Tamil Nadu during 2005-06 to 2011-12 against their (average) share of agriculture in GDP over the years. We note from the negative regression line that per capita income growth is higher in districts with less agriculture share. The regression coefficient indicates that on an average a 1 percent increase in agriculture share leads to 0.16 percent fall in the rate of growth of per capita income in Tamil Nadu districts.

Chart 16: Per Capita GDP Growth Vs. Agriculture Share by Districts



On the other hand, Per capita GDP growth has a positive relationship with the share of industry in GDP in Chart 17 as the regression line is positively sloped. The regression coefficient indicates that on an average a 1 percent increase in industry share leads to 0.11 percent increase in the rate of growth of per capita income in Tamil Nadu districts.

Chart 17: Per Capita GDP Growth Vs. Industry Share by Districts

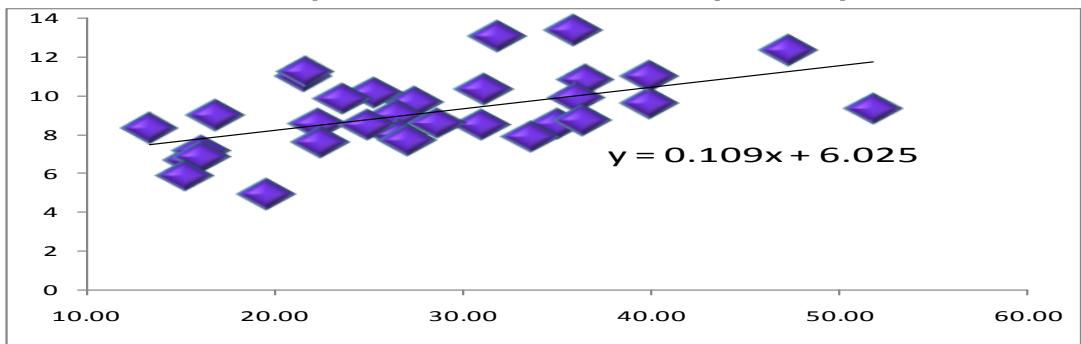


Chart 18 plots the average rate of growth of per capita income of districts in Tamil Nadu against their (average) share of services in GDP over the years. We note

from a flat regression line that per capita income growth is weakly related to higher services sector growth. The regression parameter indicates that on an average a 1 percent increase in services sector share leads to 0.021 percent fall in the rate of growth of per capita income in Tamil Nadu districts.

Chart 18: Per Capita GDP Growth Vs. Services Share by Districts

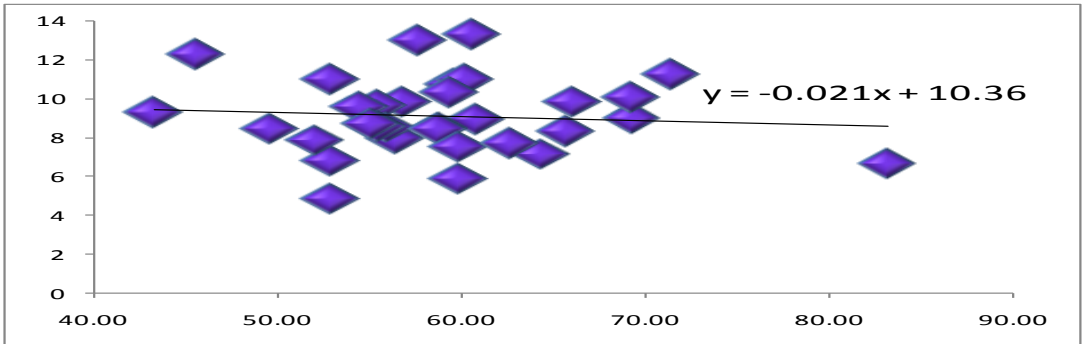
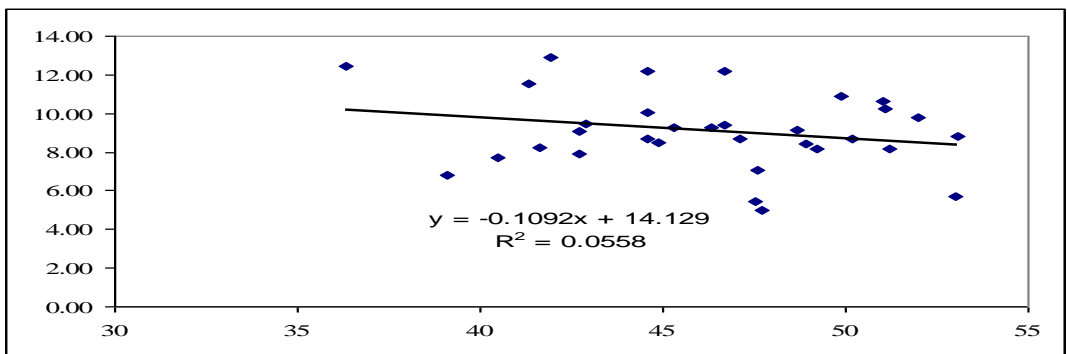


Chart 19 plots the average rate of growth of per capita income of districts in Tamil Nadu against work participation rate in 2011. We note from a slightly negatively sloped regression line that per capita income growth is weakly related to work participation rate. It seems that the absolute percentage of workforce is not a matter. What is important is the composition of workforce. As seen earlier, still 42 percent of workers are employed in agriculture.

Chart 19: Per Capita GDP Growth Vs. Work Participation Rate by Districts



Thus, industry share is the main (and positive) determinant of per capita income growth. It is noted that in the above analysis, we have related average rate of growth of

per capita income of districts with average share of agriculture or industry separately. As each year growth depends on each year share and also depends on all factors, we do the convergence model analysis in the next section where we relate per capita income growth with initial income, agriculture share, industrial share etc for every year and together.

Convergence Analysis

The theoretical foundations of the convergence approach can be traced back to the neo-classical Solow-Swan-Ramsey model of growth. The literature on regional catch-up or convergence has also been enriched by the seminal contributions of Barro and Sala-i-Martin (1991). In this model, the notion of (beta- β) convergence requires poorer economies to grow faster than richer ones.¹⁴

The key assumption of this convergence hypothesis is that poor economies in general endowed with less stock of physical capital and hence higher marginal rates of return on capital. Therefore, for any given rate of investment, the relatively backward regions will have faster growth in the transition phase. It has substantive implications that current per capita income differences among regions will narrow. It is noted that the beta convergence is conditional and perceptible only after other factors that may cause variation in steady states have been accounted for including the initial level of income.

With panel (time series wise cross sectional) data, the conditional convergence model is specified as:

$$1/T \ln (Y_{i,t}/Y_{i,t-1}) = \gamma_1 + \gamma_2 \ln Y_{i,t-1} + \gamma_3 X_{it} + \lambda_i + \mu_t + \varepsilon_{i,t} \quad (5.1)$$

where, the term in the left hand side is the annual rate of growth of per capita income of i th region in the t th time period; $Y_{i,t-1}$ is initial per capita income (i.e., last year per capita income); λ_i is region specific effect which captures impact of unobserved heterogeneity in the model and μ_t will capture the time specific impacts. These two terms (λ_i and μ_t) can be treated either as fixed or random. If the former, the model gets individual specific intercept terms.¹⁵ The steady state income of each region in the sample can be computed

¹⁴ By convergence, the literature refers to the hypothesis that β is less than zero (i.e., negative). The negative beta in the cross country (or state or district) growth regression model implies after controlling for variety of region specific factors, that countries or regions with low initial incomes grow, on an average, faster than those with higher initial incomes. It is noted that Solow model predicts a negative beta while some endogenous growth models (which assume increasing returns to scale) imply a positive beta.

¹⁵ In the fixed effects model, these two terms are treated as fixed exogenous variables. The individual (region) specific and time specific dummies are included in the model and the Ordinary Least Square method can be used to estimate the fixed effects model. This model is called as Least Square Dummy Variable (LSDV) Model.

by: $\ln Y^* = \lambda_i/\gamma_2$. In the latter, the unobserved factors are added with regular residual.¹⁶ The choice of the model depends on the Hausman statistics.

Regarding X (other determinants of per capita income growth), over 90 different conditioning variables have been appeared in existing studies, which analyze country level data. At the state or district level, most variables are not relevant and many district specific variables are not available or unobservable. Therefore, all conditioning variables can be subsumed under the region (district) specific fixed effects instead of explicitly modeling a few variables. However, in an alternative specification a few region specific available factors like sectoral share, and growth rates of sub sectors of the economy can be added.

The above equation (5.1) is estimated using the data on per capita income (real) and per capita income growth of 32 districts in Tamil Nadu during 2004-05 to 2011-12. Due to growth rate calculation, we are losing one observation for each district. Therefore, the total observations included in the analysis are: $32 \times 7 = 224$.

Empirical Results

In Table 20, we provide the conditional convergence analyses results. In model 1, we have included only the last year per capita income as the explanatory variable along with individual (district) specific and time specific dummies, because the Hausman statistics supports a two way fixed effects model. In this model, we have not included any specific X variables explicitly, but implicitly we are incorporating the effects of those factors by using state specific heterogeneity variable (λ) which subsumes effects of all such variables.

It is noted that when control variables are accounted for in the regression specification, different districts do not converge to a single steady state income rather each of them converges to its own steady state income. As expected, there is a statistically significant (at 1 percent level) negative association between growth and initial income per capita, providing a strong evidence for conditional convergence in per capita income among the districts in Tamil Nadu.

¹⁶ That is, λ and μ_t terms are treated as residuals (random). Since the error is a composite term, consisting of regular residual, λ_i and μ_t and as a result, it is heteroscedastic, the weighted least square procedure can be used to estimate the random effects model.

Table 20: Panel Conditional Convergence: Two-way Fixed Effects Model Results

Variables	Model 1		Model2		Model 3	
	Coefficient	t-ratio	Coefficient	t-ratio	Coefficient	t-ratio
Constant (γ_1)	3.3907	5.990	3.7941	8.430	1.7522	4.240
Ln Per Capita Income _{t-1} (γ_2)	-0.3108	-5.830	-0.3965	-9.250	-0.1622	-4.180
Agriculture Share			0.0098	6.620		
Industrial Share			0.0136	10.630		
Industrial Sector Growth					0.0023	13.540
Services Sector Growth					0.0037	3.330
R Square [F]	0.6292	[8.006]	0.7789	[15.64]	0.8205	[20.28]
Hausman Statistics	17.13		28.63		12.52	
District Specific Fixed Effects						
Chennai	0.0551	2.898	0.3620	11.275	0.0401	2.968
Kancheepuram	0.1408	6.558	0.1589	7.851	0.0622	3.827
Thiruvallur	0.1256	5.492	0.1259	5.985	0.0538	3.126
Vellore	0.0326	2.343	-0.0114	-0.775	0.0129	1.299
Thiruvannamalai	-0.0996	-4.455	-0.1604	-8.740	-0.0526	-3.283
Cuddalore	-0.0067	-0.505	0.0193	1.829	-0.0081	-0.841
Villupuram	-0.1483	-5.337	-0.1650	-7.414	-0.0809	-4.036
Thanjavur	-0.0501	-3.198	0.0805	4.639	-0.0226	-2.027
Nagapattinam	-0.0900	-4.767	-0.1316	-8.478	-0.0347	-2.486
Thiruvavarur	-0.1506	-5.414	-0.0676	-2.647	-0.0611	-2.957
Salem	0.0145	1.060	-0.0366	-2.742	0.0074	0.771
Namakkal	0.0682	3.705	-0.0158	-0.862	0.0305	2.311
Dharmapuri	-0.0030	-0.221	0.0244	1.768	-0.0087	-0.834
Krishnagiri	0.0573	4.218	0.0322	2.817	0.0186	1.610
The Nilgris	-0.0319	-2.378	0.0680	3.734	-0.0101	-1.062
Thiruchirappalli	0.0901	5.084	0.2534	12.470	0.0447	3.438
Karur	0.0743	4.373	0.0834	6.109	0.0376	3.076
Perambalur	-0.2829	-6.082	-0.3640	-8.814	-0.1393	-4.053
Ariyalur	-0.3248	-6.473	-0.4293	-10.198	-0.1606	-4.298
Pudukkotai	-0.0801	-4.381	-0.0908	-6.267	-0.0429	-3.279
Coimbatore	0.1044	4.830	0.0419	2.029	0.0508	3.251
Thiruppur	0.1384	5.675	0.0675	3.118	0.0695	3.908
Erode	0.0928	4.151	0.0333	1.818	0.0462	2.886
Madurai	0.0601	3.805	0.1831	10.302	0.0282	2.497
Theni	-0.1058	-5.788	-0.0651	-2.873	-0.0425	-3.017
Dindigul	-0.0042	-0.313	-0.0378	-3.393	-0.0042	-0.446
Ramanathapuram	-0.0667	-4.198	-0.0518	-3.802	-0.0379	-3.308
Sivagangai	-0.0400	-2.575	0.0331	2.349	-0.0201	-1.834
Virudhunagar	0.1366	5.133	-0.0704	-2.232	0.0702	3.651
Thirunelveli	0.0376	2.505	-0.0238	-1.601	0.0183	1.730
Thoothukudi	0.0919	4.089	0.1601	8.657	0.0516	3.214
Kanniyakumari	0.1644	6.257	-0.0055	-0.198	0.0839	4.344
Time Effects						
2005-06	-0.0523	-3.293	-0.1106	-8.237	-0.0286	-2.466
2006-07	0.0001	0.007	-0.0397	-4.514	-0.0033	-0.366

(Contd Table ...)

Variables	Model 1		Model2		Model 3	
	Coefficient	t-ratio	Coefficient	t-ratio	Coefficient	t-ratio
2007-08	-0.0568	-9.419	-0.0608	-12.943	-0.0329	-6.775
2008-09	-0.0395	-6.742	-0.0049	-0.879	-0.0148	-3.306
2009-10	0.0192	2.913	0.0318	6.062	0.0094	1.321
2010-11	0.0675	6.965	0.0880	11.333	0.0269	3.584
2011-12	0.0618	4.222	0.0962	8.109	0.0432	4.060

The speed of convergence (the rate at which the economy converges towards its steady state income) is -0.3108. This is the responsiveness of the average growth rate to the gap between $\ln Y^*$ (steady state income) and $\ln Y_0$ (initial income). By our empirical setting, this rate is the same for all districts in Tamil Nadu.

This assumption of common rate of convergence is tenable for districts in the state, which are likely to be similar in terms of the underlying parameters of technology and preferences. We can infer from the results that Chennai (or any district in the state) on an average reduces about 31 percent of the gap between its steady state income and initial income every year.

The Model 2 in Table 20 includes two additional X variables namely the agriculture share and industrial share. In this case also, the Hausman statistics supports the two-way fixed effects model. As predicted, the convergence coefficient is negative and significant. The magnitude of the convergence rate is slightly increased to 0.3965 from 0.3108. Both agriculture share and industrial share variables have positive and significant impacts on annual growth of per capita income. On an average, 1 percent increase in the industrial share will lead to 0.0136 unit increase (i.e., 1.34 percent) in the growth of per capita income while 1 percent increase in the agriculture share lead to about 1 percent increase in the growth of per capita income.

In Model 3, we have replaced agriculture share and industrial share with industry growth and services sector growth. In this case also, the Hausman statistics supports the two-way fixed effects model. The β the convergence coefficient is negative and statistically significant as predicted by the theory. In this case, the speed of convergence is decreased to 0.1622. Both industrial growth and services growth have positive impact on per capita income growth. On an average, 1 percent increase in industrial growth will lead to 0.0023 unit increase (i.e., 0.23 percent) in the per capital income growth while 1 percent increase in services sector growth will lead to 0.37 percent increase in per capita income growth. It is noticed that most of the fixed effects coefficients are statistically significant (e.g., in Mode1, 28 district specific fixed effects terms are statically significant at 5 percent level).

Steady State Income

The advantage of the above model is that the fixed effects estimated from the convergence regressions will help us to find out the individual specific steady state income.¹⁷ In Table 21, we provide the initial per capita income and steady state income of districts using the results from Models 1-3 in Table 20. Virudhunagar (and Kanniyakumari) has the highest initial per capita income, Rs.47514 (in 2004-05). The Model 1 shows that its steady state income is Rs. 84883. It is note that Kanniyakumari has the highest steady state income (of Rs. 92829) in Model 1, followed by Kancheepuram (Rs. 86038) Thiruppur (Rs. 85368). Chennai has the highest steady state income in Model 2 while Kanniyakumari has the highest in Model 3. Ariyalur has the lowest initial income (Rs. 14064) and its steady state income in Model 1 is Rs.19239 and Rs. 18259 in Model 3. Perambalur’s initial per capita income is Rs. 15442. In Model 1, its steady state income is Rs. 22016. The gap between its steady state and initial is only Rs.6574. For the poorest district Ariyalur, the gap is Rs. 5175.

Table 21: Initial Income and Steady State Income of Districts in Tamil Nadu

Districts	Initial Income	Model 1	Model 2	Model 3
Chennai	42328	65302	143581	62936
Kancheepuram	38823	86038	80361	72132
Thiruvallur	41081	81927	73133	68466
Vellore	32864	60745	49396	53207
Thiruvannamalai	21893	39697	32277	35547
Cuddalore	31064	53532	53932	46768
Villupuram	19954	33944	31848	29846
Thanjavur	26578	46557	64234	42766
Nagapattinam	24609	40945	35037	39694
Thiruvarur	20214	33690	42071	33717
Salem	33158	57309	45963	51445
Namakkal	38921	68118	48782	59316
Dharmapuri	27265	54166	54721	46578
Krishnagiri	29575	65781	55951	55113
The Nilgris	31988	49367	61973	46181
Thiruchirappalli	35868	73100	105261	64759
Karur	36397	69463	64776	61970
Perambalur	15442	22016	18038	20825

(Contd Table ...)

¹⁷ We have used LIMDEP econometric software to estimate the panel data convergence models. It adds the overall intercept and state and time specific dummies. To avoid perfect multicollinearity, it uses the restriction that $\sum \lambda_i = \sum \mu_i = 0$. In this case, λ_i is the mean deviation from the overall intercept. Therefore, adding the λ_i with overall intercept would provide the individual specific effect. It is noted that the steady state income in this case is computed by: $\ln Y^* = (\gamma_1 + \lambda_i) / \gamma_2$.

(Contd Table ...)

Districts	Initial Income	Model 1	Model 2	Model 3
Ariyalur	14064	19239	14967	18259
Pudukkotai	24973	42270	39378	37733
Coimbatore	41394	76542	57530	67220
Thiruppur	42898	85368	61892	75438
Erode	45160	73733	56125	65356
Madurai	35034	66359	86107	58473
Theni	26785	38913	42371	37833
Dindigul	31842	53973	45811	47903
Ramanathapuram	27301	44135	44021	38907
Sivagangai	26325	48096	56100	43425
Virudhunagar	47514	84883	41735	75751
Thirunelveli	34851	61737	47677	55038
Thoothukudi	44884	73527	80646	67577
Kanniyakumari	47514	92829	50247	82457

Concluding Remarks

In this Chapter, an attempt has been made to identify the factors determining the per capita income growth and test whether the convergence of growth happens at district level in Tamil Nadu. Results indicate that inter-district distribution of income is much skewed because in 18 out of 32 districts, the per capita income is below the state average; and the per capita income of the poorest (Ariyalur) district is only about 20 percent of that of the richest district (Kanniyakumari). Inter district inequality is also widening with economic growth.

In terms of high per capita income growth, Kancheepuram, Krishnagiri and Kanniyakumari are the top three districts while Ariyalur, Theni and Perambalur are the bottom 3 districts. In 19 districts, the average growth of per capita income was lower than the state average growth. Even in the top growing districts like Kanniyakumari, Krishnagiri and Kancheepuram, the growth declined during the recession years- 2007-08 and 2008-09. Districts with comparatively higher initial per capita income in 2004-05 experienced more rapid growth. Per capita income growth is higher in districts with less agriculture share and with larger industry share.

The convergence analysis results provide a strong evidence for conditional convergence in per capita income. Different districts do not converge to a single steady state income rather each of them converges to its own steady state income. The speed of convergence (the rate at which the economy converges towards its steady state income) is -0.311. Kanniyakumari has the highest steady state income while Ariyalur has the lowest initial income as well as steady state income.

Chapter 6

TAMIL NADU ECONOMY: PROGRESS, CHALLENGES AND PROSPECTS

In the previous Chapters, we have analyzed the growth dynamics of Tamil Nadu economy in the long run, medium run and short-run, its sectoral growth pattern and spatial aspects and compared Tamil Nadu's performance with other major Indian states. We have also identified the determinants of its economic growth, measured in terms of its real percapita income growth. In this Chapter, we list out our major findings, look at various dimensions or issues of recent slow pace of growth each with its own challenges and finally identify the sectoral and regional strategies to boost over all growth of Tamil Nadu economy.

Progress

Tamil Nadu is the most progressive state in terms of various economic and development parameters in the country. Currently, it is the second largest economy with about 8.3 percent share of GDP (2014-15), next only to Maharashtra. Its long-term (1981-2015) growth rate was 6.7 percent as against the India's growth of 6.3 percent. In the medium term (2005-14), it is the fourth fastest growing economy and its annual growth rate was 9.2 percent which was 1.5 percentage points above all India growth rate (of 7.7 percent). Interestingly, its growth rate was slightly higher than that of Gujarat (9.1 percent) and Maharashtra (8.6 percent) in the medium-term.

Tamil Nadu ranks fourth in terms of per capita income. Currently, its per capita income (2004-05) was Rs. 74823 and interestingly Tamil Nadu's per capita income has been always above the India's per capita income. It also ranks first in terms of credit deposit ratio and high degree of urbanization, second in low birth rate, and third in competitiveness index, manufacturing competitiveness index, low infant mortality rate, literacy and female literacy.

Between 2005-06 and 2014-15, its growth exceeded 10 percent in 4 out of 8 years. In two years (2005-06 and 2006-07), its growth exceeded 14 percent when India registered 9.5 percent and 9.6 percent in those years. It has the potential to record a double-digit growth. More than 60 percent of its GSDP comes from services and this sector recorded about 10 percent growth. Industry accounted for about 30 percent of GSDP and this sector grew at about 7.9 percent. Keeping this fact that Tamil Nadu's GSDP is driven mainly by non-agriculture sector, which grew about 9-10 percent, the Twelfth Plan sets 11 percent growth target.

Sectoral analysis of growth has identified 5 major subsectors-agriculture and allied activities, manufacturing, transport, storage and communication, trade, hotels and restaurants and construction and they jointly contribute more than 70 percent of the overall GSDP growth in Tamil Nadu. Tamil Nadu ranks 6th in terms of industrial growth and 7th in services growth, while its rank is 10 in agriculture growth among major Indian states.

Spatial analysis of growth indicates that 13 districts (Chennai, Thiruvallur, Coimbatore, Thirunelveli, Kancheepuram, Vellore, Salem, Erode, Thiruchirapalli, Kanniyakumari, Virudhunagar, Thiruppur and Madurai) out of 32 districts contribute more than 60 percent of GSDP of Tamil Nadu.

Erode, Namakkal and Villupuram are the top 3 in terms of higher contributions to GSDP agriculture of Tamil Nadu. Coimbatore, Thiruvallur and Kancheepuram jointly accounted for about 22 percent of Industry GSDP of the state while Chennai, Kancheepuram and Thiruvallur jointly accounted for about 23.4 percent to total services GSDP of the Tamil Nadu.

Kancheepuram (14.7 percent), Krishnagiri (13.4 percent), and Thiruvallur (12.7 percent) recorded the fastest GDDP annual growth rates. Top 3 in terms of high average industrial growth were: Kancheepuram, Kanniyakumari and Krishnagiri. Krishnagiri, Dharmapuri and Thiruvallur were the top 3 in high services growth. Coimbatore, Namakkal, and Thiruvarur are the top 3 in high agriculture growth.

Kanniyakumari, Kancheepuram and Thiruppur are the top 3 districts in terms of higher per capita income. Kancheepuram, Kanniyakumari and Krishnagiri are the top 3 districts in terms of higher annual rate of growth of per capita income. At district level, the per capita income growth is positively associated with (i) high industrial share, (ii) high industrial growth and (iii) high services growth. It is however, negatively related to (i) work participation rate and (ii) agriculture share.

In Tamil Nadu, the regional level convergence analysis indicates that convergence hypothesis is valid, i.e., poorer districts grow faster than richer ones. The rate at which the economies converge towards their steady state income is 0.311. That is, Chennai or any other district in Tamil Nadu on an average reduces about 31 percent of the gap between its steady state (i.e., target) income and initial income every year.

Virudhunagar has the highest initial income in the state. Kanniyakumari has the highest steady state income, followed by Kancheepuram and Thiruppur. Ariyalur and Perambalur have the lowest initial income and lowest steady state income too.

Challenges facing Tamil Nadu Economy

(i) High Volatile Growth: Tamil Nadu's growth is highly volatile and more vulnerable to external shocks as compared to all India growth pattern. As Tamil Nadu produces goods and services for the nation as well as global economies such as automobiles, textiles, and IT products, in response to demand it would be difficult for the state to have autonomous growth during a worldwide recession.

(ii) Falling Trend Growth Rate: Tamil Nadu's trend growth rate decreased from about 8.8 percent in 2008-09 to 7.2 percent in 2014-15. That is, 1.6 percentage points less than the peak rate of 8.8 percent. This downturn in the economic condition is a concern. However, it is noted that trend growth of India also declined from 7.66 percent to 6.78 percent.

(iii) Slow Pace of Growth in the Short-run: After 2002, its growth dipped into a very low level thrice, when there was worldwide recession: (i) 2002-03 and 2003-04; (ii) 2007-08 and 2008-09; and (iii) 2012-13 and 2013-14. It is noticed that these are initial years of Tenth, Eleventh and Twelfth Plan periods. This indicates the presence of cyclical trend. Another similarity is that in all this short span of time, agriculture registered a negative growth due to bad monsoons. Thus, worldwide recession affected industrial and services sector growths while the drought affected agriculture. This led to the sudden fall of GSDP of the state in the short-run. This also led to greater uncertainty and raised doubt in sustaining its high growth rate target.

(iv) High Inflation: Evidences clearly indicate that during recession years, the prices in Tamil Nadu have gone above all India prices. This needs special attention.

(v) Falling Agriculture Share of GSDP: Continuous fall of agriculture share (from 17 percent in 1999-00 to 7 percent in 2014-15) is a concern given the fact that growth of this sector is vital for food security in the state. As per Census 2011, still 42 percent of the workers are in agriculture (as cultivators and agriculture labours). Evidences indicate that districts with high share of agriculture are basically the poorest districts. As mentioned above, there is an element of cyclicity in the growth process of this important sector. Particularly in the initial two years of every plan period, this sector

witnessed negative or low growth due to drought. As Tamil Nadu does not have any perennial river, maintaining a sustained growth of this sector is a major challenge.

(vi) Volatile Growth of Industry: Like agriculture, industry growth too is volatile. Between 2005-06 and 2013-14, in some years it was 20.9 percent and in some other it was -2.3 percent. The major concern is that after 2009-10, its growth has been continuously declining from 20.9 percent to 3.6 percent. In addition, the global slow down, power shortage and rising input prices including oil prices might have caused this. High growth of this sector is essential for generating employment.

(vii) Volatile Growth of Construction: While construction registered the highest growth of 12.2 percent in the Eleventh Plan among the sub sectors, its growth declined to just 1.6 percent in the initial three years of 12th Plan. Its contribution to over all growth of GSDP was not consistent. Its contribution was about 25 percent in 2007-08 and 15 percent in 2011-12. But it accounted for -6.21 percent in 2012-13 and 1.5 percent in 2013-14. Rising inputs prices (cement, sand, iron etc.) and shortage of inputs are major concern. From the employment generation point of view, maintaining high growth of this sector is important.

(viii) High Dependency on 5 Sub Sectors: Over all growth of GSDP of Tamil Nadu depend on 5 sub sectors-(i) agriculture and its allied, (ii) manufacture, (iii) transport, storage and communication, (iv) trade, hotels and restaurants and (v) construction. They jointly contributed about 70 percent of overall GSDP growth in 2005-06, 2006-07 and 2010-11. They also contributed about 80 percent of growth in 2009-10. But in recession years, they contributed poorly. For instances, they accounted for about 38.5 percent of growth in 2008-09 and in 2012-13, they contributed -0.66 percent. These major but problematic sectors need special attention.

(xi) High Dependency of 13 Districts: More than 60 percent of over all GSDP comes from 13 major districts: Thiruvallur, Thirunelveli, Chennai, Coimbatore, Kancheepuram, Vellore, Salem, Kanniyakumari, Thiruchirappalli, Erode, Virudhunagar, Madurai and Thiruppur. 11 bottom districts: Sivagangai, Pudukkotai, Cuddalore, Nagapattinam, Karur, Ramanathapuram, Theni, Thiruvarur, The Nilgiris, Ariyalur and Perambalur contributed only 4.4 (12 percent) percent of overall growth of GSDP of Tamil Nadu in 2007-08 (2009-10). These districts need special attention.

(x) Regional Inequality: In 18 out of 32 districts the per capita income is below the per capita income of the state. In 19 districts, the per capita income growth is less than the

state (average) per capita growth. The per capita income of the top ranked district is 4.94 times larger than that of the poorest district. Almost all the poorest districts fall in the eastern part of the state and many of them are coastal districts. Inter district income inequality is also widening with economic growth. The rising spatial inequality may cause social and political instability in the state. The convergence analysis indicates that the poorer districts are not only having relatively low per capita income but also relatively low steady state (target) income. That is, they set low target to achieve. They deserve special attention.

Prospects of Tamil Nadu Economy

- (i) Government policy should focus on a limited number of sectors to lead to positive feedback cycles by creating sectoral income spurts, which generates demand for other goods and services both from output and input sides thereby generating growth through demand and supply inter-linkages. The linkages between agriculture and industry and between industry and services are well known. Obviously the focus should be on agriculture and industry.
- (ii) Growth of agriculture is vital for food security and safeguarding livelihood of poor. Given limited availability of inputs like land and irrigation, the focus should be on productivity, efficiency and technological progress for ensuring high output growth of this sector.
- (iii) For any state in India, given the mobility of savings and resources, overall savings of the country are available for investment. Given the all-India common market, the cost of accessing such savings in Tamil Nadu cannot be higher than that for other states. Data on credit-deposit (C-D) ratio indicates that the C-D ratio has been considerably higher than 1 for Tamil Nadu. It was close to 0.75 for all India. This indicates that not only savings are available from the rest of the country, but Tamil Nadu is also able to fully avail of its own savings. It is essential to ensure that these investments are properly used for agriculture and industrial development in the state.
- (iv) As agriculture growth is highly volatile (industry too), its risk-adjusted return may be low and so this sector may fail to attract private investments. Government investments should be the substitute for this.
- (v) Based on macro forecast of future recession years and forecast of bad monsoon years, appropriate strategies need to be taken in the cases of both agriculture and industry. Proper water management (water saving during excess rainfall) will help to

provide irrigation during bad monsoon years. Industries should be advised to take long-term orders such that production will not halt during the recession. To ensure continuous production, Government policy should ensure uninterrupted power at cheaper price, stable input prices, availability of raw materials and credit facility to SMES etc.

- (vi) Slow pace of growth in the short run is an issue. However, evidences indicate that Tamil Nadu had the potential to overcome this issue and maintain a higher average growth in the medium term. Government needs to have sufficient higher fiscal buffers to undertake counter cyclical policy measures to sustain the growth even in the recession period.
- (vii) Industry is the main driver of growth in the state. With increased competition, protecting exiting industries and attracting new industries are difficult. Appropriate strategies need to be taken to ensure high industrial development in the state.
- (viii) As Tamil Nadu produces goods and services for the nation as well as global economies such as automobiles, textiles, and IT products, in response to demand it would be difficult for the state to have autonomous growth during a worldwide recession. Industrial diversification may be useful.
- (viii) During recession, Government policy should focus on containing inflation in the state. Price stability is an important factor for sustainable growth.
- (xi) Contributions from poor districts are very low. There is a need to find out whether they have proper resources, and they properly use their available resources, and also to find out their efficiency in generating GDDP. It is also necessary to find out why they are less efficient. Then appropriate strategies need to be taken to improve their efficiency level.
- (x) Most of the Poor districts are geographically concentrated on the eastern part of the state below two prosperous districts: Kancheepuram and Thiruvallur. Special packages for these poorer districts will improve their performances. As most of these districts are coastal districts, new industrial corridor, infrastructure development in those areas will also help.

Appendix A

STATE FINANCES: A BRIEF REVIEW

Tamil Nadu has managed its finances in a fiscally prudent manner. Like all other state governments, Tamil Nadu had also witnessed a serious deterioration in various indicators of fiscal balance towards the end of the nineties and the early years of the current decade including large revenue deficits, and large fiscal deficit relative to GSDP. But these imbalances were brought under prudent limits in the framework of Fiscal Responsibility and Budget Management Act (FRBMA), which was enacted in 2003, making Tamil Nadu one of the first states to enact such legislation even prior to the recommendation of the Twelfth Finance Commission.

Fiscal Trend

During 2005-06 to 2012-13, the revenue account in Tamil Nadu showed surplus except in two years 2009-10 and 2010-11 with the erosion of central tax buoyancy and slow down of the economy. However, in those years also it was less than 1 percent of GSDP. In the last three years, the revenue account showed deficit, it was less than 1 percent of GSDP (Tables A.1 and A.2).

The fiscal deficit relative to GSDP was kept below 3 percent in all years since 2004-05. In Tamil Nadu, the outstanding liabilities relative GSDP was 25.56 percent in 2004-05. After this year, it started decreasing and reached 19.23 percent level in 2015-16 (BE). This level of debt-GSDP ratio may be an acceptable (or sustainable) level due to the levels as suggested in various Finance Commissions including the Fourteenth Finance Commission.

Own non-tax revenues relative to GSDP is just 1 percent. Tamil Nadu ranks low in non-tax revenues among major Indian States. Part of the reason is that some user charges (such as bus fares) do not go directly to the state's treasury but are collected by state-owned enterprises. There is some potential for the state to increase the non-tax revenues.

Table A.1: Tamil Nadu State Finances: Selected Fiscal Aggregates

(Rs. Crore)

Fiscal Indicators	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15RE	2015-16BE
Own Tax Revenues	19357	23326	27771	29619	33684	36547	47782	59517	71254	73718	85773	96083
Own Non Tax Revenues	2208	2601	3423	3304	5712	5027	4651	5684	6554	9343	8868	9072
State's Own Revenue	21565	25927	31194	32923	39397	41574	52434	65201	77809	83061	94640	105155
Total Central Transfers	6886	8033	9720	14597	15646	14270	17754	20001	21019	24975	38548	37527
Share in Central Taxes	4236	5013	6394	8065	8511	8756	10914	12715	14520	15853	16824	21150
Grants	2650	3020	3326	6532	7135	5514	6840	7286	6499	9122	21724	16377
Total Revenue Receipts	28452	33960	40913	47520	55042	55844	70188	85202	98828	108036	133189	142681
Total Revenue Expenditure	29155	32009	38265	42975	53590	59375	72916	83838	97067	109825	136725	147297
Capital Expenditure <i>of which</i>	5650	5094	8207	9244	11934	10863	14688	21819	19337	19415	24147	27514
Capital Outlay	4564	4055	5952	7462	9104	8573	12436	16336	14568	17173	20341	24313
Loans and Advances (Gross)	1086	1040	2254	1782	2830	2291	2252	5483	4769	2242	3806	3201
Recoveries of Loans ,Advances	783	892	1602	1013	1934	2587	770	3181	1058	620	338	301
Revenue Deficit@	703	-1951	-2648	-4545	-1452	3531	2729	-1364	-1760	1788	3537	4616
Fiscal Deficit	5570	2251	3956	3686	8548	11807	16647	17274	16519	20584	27346	31829
Outstanding liabilities	55970	63850	68560	73890	86150	101710	114470	130630	147416	154051	181036	211483
GSDP at Current Prices#	219003	257833	310526	350819	401336	479733	584896	667202	744859	854238	976703	1099675

* At the end of March; # 2004-05 base series. @ minus sign means surplus

Source (Basic Data): State Budget Documents of Tamil Nadu (Various Years); RE-Revised Estimates; BE-Budget Estimates. For GSDP, CSO

Table A.2: Tamil Nadu State Finances: Selected Fiscal Aggregates (percent)

(Percent of GSDP 2004-05 base series)

Fiscal Indicators	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15RE	2015-16BE
Own Tax Revenues	8.84	9.05	8.94	8.44	8.39	7.62	8.17	8.92	9.57	8.63	8.78	8.74
Own Non Tax Revenues	1.01	1.01	1.10	0.94	1.42	1.05	0.80	0.85	0.88	1.09	0.91	0.82
State's Own Revenue	9.85	10.06	10.05	9.38	9.82	8.67	8.96	9.77	10.45	9.72	9.69	9.56
Total Central Transfers	3.14	3.12	3.13	4.16	3.90	2.97	3.04	3.00	2.82	2.92	3.95	3.41
Share in Central Taxes	1.93	1.94	2.06	2.30	2.12	1.83	1.87	1.91	1.95	1.86	1.72	1.92
Grants	1.21	1.17	1.07	1.86	1.78	1.15	1.17	1.09	0.87	1.07	2.22	1.49
Total Revenue Receipts	12.99	13.17	13.18	13.55	13.71	11.64	12.00	12.77	13.27	12.65	13.64	12.97
Total Revenue Expenditure	13.31	12.41	12.32	12.25	13.35	12.38	12.47	12.57	13.03	12.86	14.00	13.39
Capital Expenditure <i>of which</i>	2.58	1.98	2.64	2.63	2.97	2.26	2.51	3.27	2.60	2.27	2.47	2.50
Capital Outlay	2.08	1.57	1.92	2.13	2.27	1.79	2.13	2.45	1.96	2.01	2.08	2.21
Loans and Advances (Gross)	0.50	0.40	0.73	0.51	0.71	0.48	0.39	0.82	0.64	0.26	0.39	0.29
Recoveries of Loans ,Advances	0.36	0.35	0.52	0.29	0.48	0.54	0.13	0.48	0.14	0.07	0.03	0.03
Revenue Deficit@	0.32	-0.76	-0.85	-1.30	-0.36	0.74	0.47	-0.20	-0.24	0.21	0.36	0.42
Fiscal Deficit	2.54	0.87	1.27	1.05	2.13	2.46	2.85	2.59	2.22	2.41	2.80	2.89
Outstanding liabilities *	25.56	24.76	22.08	21.06	21.47	21.20	19.57	19.58	19.79	18.03	18.54	19.23
GSDP at Current Prices#	100	100	100	100	100	100	100	100	100	100	100	100

Source: Computed using Table A.1.

Relative to GSDP, own tax revenues in Tamil Nadu have historically been one of the highest among states for many years. It is slated to be at 8.8 percent in 2014-15 (RE). The slightly lower figure for own tax revenue relative to GSDP in 2009-10 reflects consensus of the revenue impact of introduction of State VAT.

Table A.3 shows the performance of own tax revenues in Tamil Nadu relative to GSDP in terms of major taxes. It also provides annual buoyancy and growth rates of major taxes. Sales tax (State VAT) is the major source of own tax revenues, followed by state stamps and registration duties and state excise duties. In 2009-10 the own tax buoyancy was only 0.44 and then it steadily increased to 1.75 in 2011-2012. During this period, the State VAT buoyancy also steadily increased from 0.49 to 1.91. Buoyancies of other taxes also improved during this period. Currently the own tax buoyancy is 0.95 and state VAT buoyancy is 0.94.

Fiscal Transfers

Fiscal transfers to Tamil Nadu come from Finance Commission transfers, Plan grants, and grants under various centrally sponsored schemes. In the aggregate, the transfers remained around 2.8-4.2 per cent during 2004-05 to 2015-16 (BE).

Government Expenditure

On the expenditure side, there has been a steady improvement in the capital outlay since 2005-06, which is estimated at 2.21 percent for 2015-16 BE. The revenue expenditure was kept more or less stable at slightly below 14 percent of GSDP. It should be recognized that while maintaining a high tax-GSDP ratio Government of Tamil Nadu has also historically had very high salary expenditure relative to its total revenue expenditure due to its thrust on social sectors.

Table A.3: Own Tax Revenues in Tamil Nadu: 2004-05 to 2013-14

Taxes	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15RE	2015-16BE
As percent of Own Tax Revenue												
Sales Tax	67.14	66.68	63.83	61.30	61.38	62.01	59.88	60.97	61.81	72.62	71.78	71.68
State Excise	13.17	13.62	14.35	16.08	17.09	18.44	16.99	16.76	17.02	6.83	7.43	7.59
Stamps and Registration	8.29	8.94	10.79	12.85	11.26	10.02	9.73	11.06	10.73	11.19	10.88	10.81
Motor Vehicle tax	5.24	4.82	4.54	5.01	5.08	5.54	5.57	5.21	5.51	5.00	4.99	5.08
Goods and Pass. Tax	3.95	4.22	4.48	3.71	2.91	2.99	3.40	3.57	3.16	2.50	2.89	2.86
Others	2.22	1.71	2.00	1.06	2.29	1.00	4.43	2.43	1.77	1.86	2.03	1.97
Own Tax Revenue	100	100	100	100	100	100	100	100	100	100	100	100
As percent of GDP												
Sales Tax	5.93	6.03	5.71	5.18	5.15	4.72	4.89	5.44	5.91	6.27	6.30	6.26
State Excise	1.16	1.23	1.28	1.36	1.43	1.41	1.39	1.50	1.63	0.59	0.65	0.66
Stamps and Registration	0.73	0.81	0.97	1.08	0.95	0.76	0.80	0.99	1.03	0.97	0.96	0.94
Motor Vehicle tax	0.46	0.44	0.41	0.42	0.43	0.42	0.45	0.46	0.53	0.43	0.44	0.44
Goods and Pass. Tax	0.35	0.38	0.40	0.31	0.24	0.23	0.28	0.32	0.30	0.22	0.25	0.25
Others	0.20	0.16	0.18	0.09	0.19	0.08	0.36	0.22	0.17	0.16	0.18	0.17
Own Tax Revenue	8.84	9.05	8.94	8.44	8.39	7.62	8.17	8.92	9.57	8.63	8.78	8.74

Annual (Nominal) Growth Rate (percent)											
	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15RE	2015-16BE
Sales Tax	19.69	13.97	2.42	13.87	9.61	26.27	26.82	21.36	21.55	15.01	11.87
State Excise	24.62	25.49	19.51	20.81	17.12	20.40	22.91	21.56	-58.48	26.64	14.44
Stamps and Registration	29.95	43.77	26.93	-0.29	-3.47	26.99	41.50	16.18	7.92	13.07	11.31
Motor Vehicle tax	10.86	12.08	17.63	15.26	18.43	31.38	16.58	26.68	-6.23	16.18	14.09
Goods and Pass. Tax	28.94	26.25	-11.74	-10.82	11.56	48.89	30.60	6.04	-18.16	34.40	11.00
Others	-6.74	38.9	-43.7	146.7	-52.6	478.4	-31.6	-12.8	8.80	27.1	8.60
Own Tax Revenue	20.50	19.06	6.65	13.73	8.50	30.7	24.56	19.7	3.46	16.4	12.02
GSDP	17.73	20.44	12.98	14.40	19.53	21.92	14.07	11.64	14.68	14.34	12.59
Tax Buoyancy (percent)											
Sales Tax	1.11	0.68	0.19	0.96	0.49	1.20	1.91	1.84	1.47	1.05	0.94
State Excise	1.39	1.25	1.50	1.45	0.88	0.93	1.63	1.85	-3.98	1.86	1.15
Stamps and Registration	1.69	2.14	2.08	-0.02	-0.18	1.23	2.95	1.39	0.54	0.91	0.90
Motor Vehicle tax	0.61	0.59	1.36	1.06	0.94	1.43	1.18	2.29	-0.42	1.13	1.12
Goods and Pass. Tax	1.63	1.28	-0.91	-0.75	0.59	2.23	2.17	0.52	-1.24	2.40	0.87
Others	-0.38	1.91	-3.37	10.19	-2.69	21.82	-2.24	-1.10	0.60	1.89	0.68
Own Tax Revenue	1.16	0.93	0.51	0.95	0.44	1.40	1.75	1.69	0.24	1.14	0.95

Source (Basic Data): State Budget Documents of Tamil Nadu (Various Years); RE-Revised Estimates; BE-Budget Estimates.

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