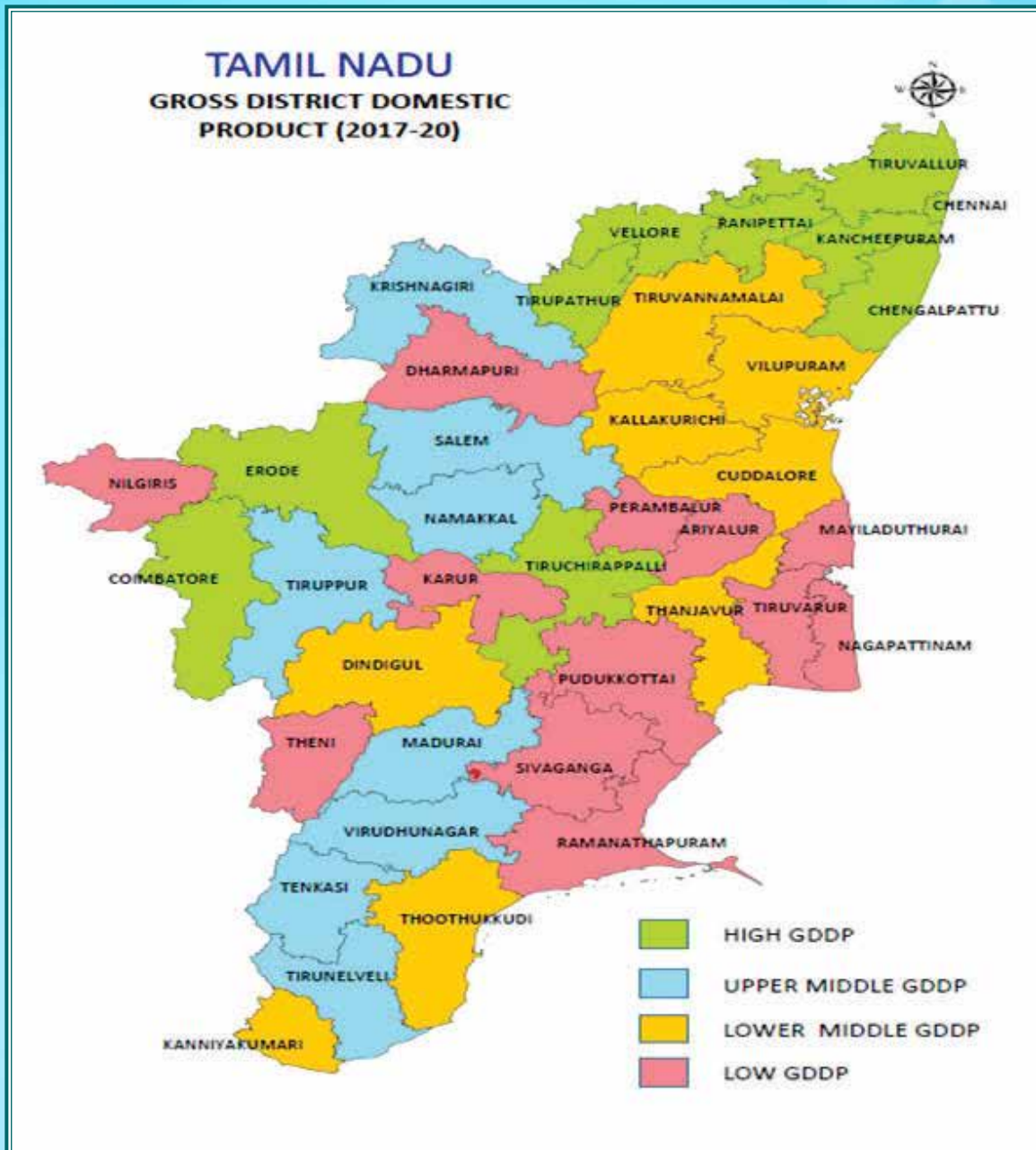




REGIONAL GROWTH PATTERN IN TAMIL NADU



State Planning Commission,
Government of Tamil Nadu, Chennai.

November 2022

Report Prepared by

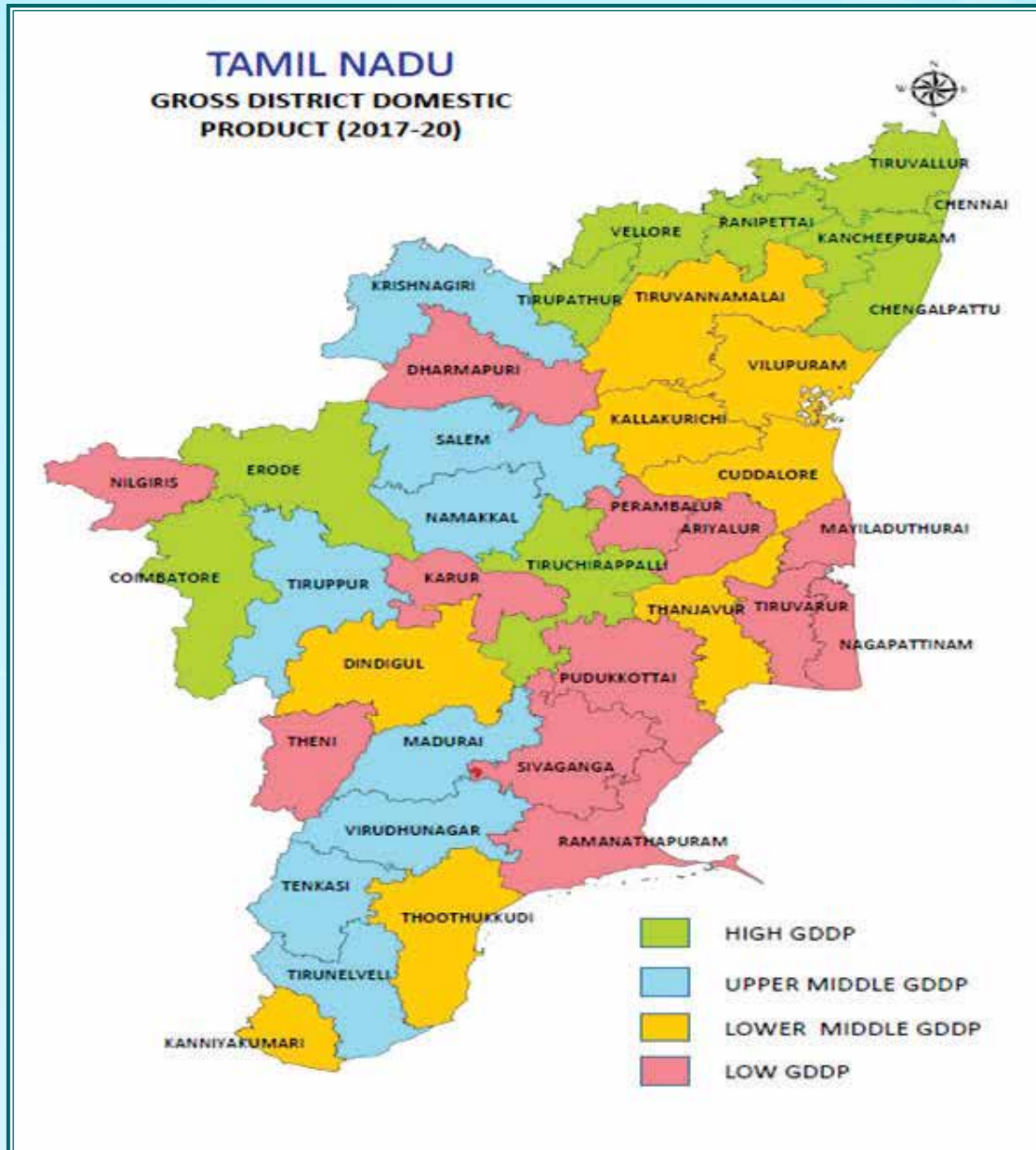
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Government of Tamil Nadu, Chennai.

November 2022

J. JEYARANJAN
Vice Chairman



**STATE PLANNING COMMISSION,
"EZHILAGAM",
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24.11.2022

FOREWORD

Balanced regional growth is an elusive economic objective to achieve for policy makers. While partial success is achieved in this regard during the Dravidian Rule in Tamil Nadu, it has to be flagged for further consolidation of our efforts towards achieving it.

Regional imbalance in economic growth in Tamil Nadu is of a lower degree compared to other states of similar economic structure and size in India. This has been possible primarily due to conscious spread of the public utilities like education and health care to all the villages of the state during the Dravidian rule. In addition to this, the economic opportunities have also spread to all parts of the state, through creating infrastructure facilities like dense network of transport and electricity facilities. Yet, the regional imbalance still exists and that needs our concerted effort.

Market economy has its own pull and push factors to saturate a region with economic activities. This is often aided by the public investments on infrastructure facilities, because the positive spillover effects of growth centres like increasing employment and public revenue potentials cannot be wished away. However, decongesting developed districts and spreading economic activities to all districts in the state are essential.

This report on 'Regional Growth Pattern in Tamil Nadu' is an important document that explicitly underlines the imbalance in growth across districts in Tamil Nadu. Apart from quantifying the growth imbalance based on Gross District Domestic Product, the report explores the possibilities of identifying growth potentials in each region. A study of sub-sectors data from the GDDP along with data from other sources should help us to create a strategy for region-specific growth plans. Another important take away of this report is the need to frequently revise the methodology of estimating Gross State Domestic Product for Tamil Nadu.

I commend the authors – R. Srinivasan, Full Time Member, SPC and M.S. Elayaraja, Research Associate, SPC for this important contribution to the policy discussion in Tamil Nadu.

State Planning Commission is extremely happy to publish this report and this is one more in the series of policy oriented publications of the commission.

Vice Chairman
State Planning Commission

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Regional Growth Pattern in Tamil Nadu

Introduction:

Tamil Nadu is one of the few states in India that have regionally well spread economic activities¹. As the most urbanised state in the country, the average distance of a village from a town is a little more than 10 kilometres as per Census 2011. This shows that the urbanisation is spatially well spread and so should be the economic activities in the state. Though this is true for Tamil Nadu than other states that are similarly placed in terms of economy and demography, the discussion in Tamil Nadu is that the regional concentration of economic activity or regional imbalance in economic growth is a real problem and that needs immediate policy attention.

Normally the economic policies and programmes are designed to address issues in specific sectors and location specific interventions for sectors are not given equal importance. Enterprises in a sector are spatially concentrated for locational advantages such as availability of infrastructure facilities and nearness to input/output markets. Spatial concentration of enterprises will once again reinforce the concentration of related factors in such locations. The convergence of economic activities in districts is an organic process and that naturally attracts public policy support for further development in a market system. On the contrary, the political pressure to spread the economic opportunities of employment and enterprise to all districts is high in a democracy. Therefore, understanding district economies and their structures are essential to find the reasons for lack of growth and also to strategise the development plans suitable for districts.

One of the prime indicators of growth imbalance between districts is the Gross District Domestic Product (GDDP). GDDP reflects the value addition in each district. GDDP is also disaggregated by broad sectors – primary, secondary and tertiary and also sub-sectors within each of these three sectors. A nuanced analysis of this data should be useful to gauge the outcomes of economic policies and programmes in districts. We can also infer that the imbalance measured by this indicator can be attributed to the differences in the growth of individual sectors/sub-sectors across districts. This note tries to distill information of these indicators and construct an argument for programmatic intervention to have spatially balanced growth.

The methodology for the estimation of district wise GDDP was first designed by the Central Statistical Organisation (CSO), Government of India in 1988. A few states estimated the GDDP for their districts. The methodology should have been tweaked to suit the availability of database in states. In order to enthruse all the states to estimate GDDP for their districts as well as to standardise the methodology of estimation of GDDP the CSO, in a meeting of State Directorates of Economics and Statistics in 1995, entrusted the work of developing the methodology for estimating GDDP to Karnataka and Uttar Pradesh. They submitted a report in 1996 and since then all the states have been following this methodology for estimating GDDP. The CSO in 2018 constituted a committee with Dr Ravindra H Dholakia as Chairperson to evolve a methodology for creating sub-national accounts for states

¹ Coefficient of Variation of GDDP in a state is a measure of regional imbalance in growth. We take Tamil Nadu, Maharashtra and Karnataka as states that can be categorised as developed in terms of size and structure of economy. The Coefficient of Variation of GDDP (2017-20) of the three states: Tamil Nadu - 72%, Maharashtra - 144% and Karnataka 190%. Thus Tamil Nadu has better regional balance in growth compared to the two other states.

and districts and the committee submitted its report in March, 2020 (Government of India, 2020). The recommendations of this committee is yet to be implemented.

Discussion on the methodology of estimating GDDP is as essential as the analysis of GDDP itself. Therefore, this note is of four sections. Section 1 deals with the methodology of estimating GDDP and the suggested changes by the Dholakia Committee. Section 2 analyses the three series of GDDP figures of Tamil Nadu. Section 3 analyses the relative importance of the three sub-sectors in the district and zonal Gross Value Addition (GVA) and followed by summary and the way forward in Section 4.

Section 1: Methodology of Estimating Gross District Domestic Product

The note on “Methodology for Preparation of Estimates of District Domestic Product” by the Department of Economics and Statistics, Government of Tamil Nadu (2021) gives a detailed account of the methodology being followed in the estimation of GDDP for the state. Basically the methodology is to estimate the origin of value addition in districts and it is based two broad principles – one, in the commodity producing sectors, the value addition is captured through the estimation procedures used in National Income Accounts for estimating Gross State Domestic Product (GSDP); and two, in the non-commodity sectors, the GSDP in a sector is assigned to each district based on some available indicators. Even in the estimation of GSDP, the CSO apportions the value addition in supra-regional and super-regional sectors to states². Hence, when GSDP of a sector itself is an approximate estimation, then assigning that approximate value to districts based on proxy indicators, affects the robustness and reliability of GDDP estimates. The apportioning of state level aggregates for districts is plagued with certain other methodological issues. The GDDP estimation is an income-origin method or a supply side estimation just like GSDP estimation. In other words, like in GSDP, the demand side estimation of GDDP through its components like consumption and expenditure is not possible. Of late, there is some effort to estimate consumption of fixed capital at the state level. Given the freely mobile factors of production between districts, we cannot conclude that the income generated in a district is distributed among the people in a district³. Thus, GDDP of a district is not an estimation of income of the people in that district, whereas it is an estimation of value-addition in that district. This limited information is enough to kindle sources of economic activities in districts, which should be one of the policies for achieving balanced regional growth. The tax capacity of local governments differs in terms of income generated as well as income accrued in a region. The GDDP figures should be useful to understand the local government’s tax capacity. Therefore, the macro-estimates of local tax bases depend on GDDP to the extent the tax bases are on income generation in the district and such tax bases are on income accrual, then GDDP can seldom be a proxy for local tax base.

Let us now turn to specific sectoral estimation of GDDP. In the agriculture sector, the data on agricultural production in each district is fairly estimated using production approach, that is, using

² Activities like railways, banking and insurance, communication, and central government administration have their operations beyond geo- graphical boundaries of individual states. (G)SDP estimates for these sectors, termed supra-regional sectors, are allocated by the CSO among states based on relevant indicators such as number of employees and physical assets. Some of the activities such as foreign embassies, defense, paramilitary forces, the border security force, and high sea drilling are termed super-regional sectors, which are not included in the SDP of any state. Hence, the sum total of SDP for all states does not tally with the corresponding all-India GDP figures.” (Sethia, 2016).

³ This is true of GSDP also, as there is no data available on movement of capital and labour across states.

the area under each crop and crop productivity at the district level. However, for some crops if the district productivity is not available then the state level productivity is used along with district level area under a crop. The market price at the district level or state level is used for calculating monetary value of agricultural production. This methodology is also used for by-products of agriculture like straws and stalks, and the gross value of output from agricultural sector is estimated for each district. The value of inputs for agriculture is assigned from the GSDP estimates based on area of crop and input requirement ratios estimated by CSO are used. For industrial inputs like fertilisers and diesel oil a more robust data base is available. The state level estimation of irrigation value is assigned to districts by the extent of irrigated land. The difference between estimations of output and input values is the Gross Value Added in the agricultural sector.

The Dholakia Committee recommended that the depreciation of agricultural implements were not accounted in the estimation. Moreover, the irrigation charges collected should be a better indicator than irrigated area for estimating value addition from irrigation. Similarly use of credit flow at the district level to agriculture and animal husbandry sectors should also used in the estimation was the recommendation of the Dholakia Committee.

Integrated Sample Survey Report of the Animal Husbandry Department and Indian Livestock Censuses are the main sources of data for estimating value addition in that sector. Data from the reports of Khadi and Village Industries Board and Central Silk Board are also used in the estimation of value addition for honey and silk products respectively.

The state level estimate of Gross Value Added (GVA) of industrial wood sector is distributed among the districts in proportion to the district-wise area of forest obtained from the Season and Crop Report. Domestic consumption of wood is assigned based on population. District wise estimation of marine and inland fish catch is recorded and state level prices are used for monetary values of fish production.

Data on both major and minor minerals are obtained for each district from state department of mines and minerals, similar data on salt production is also obtained. Conversion factors/ratios are provided by CSO to get GVA.

The estimation on GVA in manufacturing is based data from Annual Survey of Industries for organised manufacturing sector, and census data on labour for unorganised manufacturing sector.

District wise workforce in electricity and water supply is base to assign state level value addition in these sub-sectors to districts.

Census data on residential buildings and construction workers by district are used for assigning state GVA in construction sector across districts.

The size of workforce in districts is used for assignment of state level GVA in the following sectors: Railways, water and air transport, communication, trade, hotels and restaurants, public administration, and many other services. Generally workforce in each sector is derived from the latest census and projected for the year of estimation. The Dholakia Committee recommended to use salary of employees for value addition in Railways and this can be applied for many other government services as well. Similarly the value of air passengers and cargo could be used for air transport was a suggestion from the Dholakia Committee. Generally use of labour compensation or salaries should be a good indicator for services sector while determining district level assignment of state GVA.

For some of the other services, some related variables are used for assignment of state GVA for districts, such as, occupancy for public warehouses, workforce for private warehouses, number of vehicles for road transport, bank deposits for banking and insurance, and the workforce in combination with earning per worker is used for real estate, ownership of dwellings and business services. The Dholakia Committee recommended the storage capacity as an indicator for warehouses, this could be used for private warehouses. Along with deposits, bank credit should be used for the banking sector.

Inter-temporal comparison of GDDP requires the data to be presented at constant prices. We come to know that in some sectors the current prices of commodities in the sector are used. However, the deflator could be based on general price index. Moreover, the base year for the latest series, 2011-12, is not considered as a normal year for price index calculation as commented the Dholakia report (Government of India, 2020). Therefore, the inter-temporal analysis of GDDP based on constant prices will be difficult to carry out, without restrictive assumptions.

The GSDP itself is an estimation largely based on allocation of GDP among states. Therefore, further allocation of GSDP among districts should also be another level of approximation. Tamil Nadu can independently try to improve the estimation of GSDP and GDDP based on the suggestions of Dholakia Committee Report. As far as possible, the value addition in each sector should be estimated using appropriate variables. New databases are evolving such as tourists in districts and visitors to recreation facilities. GST data gives value addition for all the enterprises in the district by products and services. This new database should be used to replace other proxies which do not reflect the actual value addition (Sethia, 2021). The Dholakia committee report gives specific suggestions for the use of GST data to estimate both state and district level value additions in specific sectors. This GST database is available within the state and therefore should be used by Tamil Nadu at least as an experiment.

Many new activities are evolving in the market which should be imaginatively captured with new databases. In the case of public sector, economic and purpose classification of public expenditure of both state and local bodies' budgets should be published. This will largely help in estimating value addition by public expenditure. The income accruing through public sector in each district should also be possible with the details of data extracted from IFHRMS and census of government employees. Insurance penetration data for agriculture and other sectors should be collected to estimate value addition by insurance sector.

As the reliability and robustness of GDDP data should be improved, the frequency of release of estimates also should be carefully considered. Unlike the GDP and GSDP estimates that are released every year and even less than a year, that is, for a quarter, the GDDP can be released with longer time intervals. Of course, wherever the bottom-up approach of estimating value addition in commodity production sectors is possible, the district level estimates for such sectors can be realised annually. Whereas the complete estimation of GDDP and its disaggregates may be released once in five years after we get enough of robust data for arriving reliable estimates.

Section 2: Inter-District Variation in Economic Growth

The first series of GDDP in Tamil Nadu was released in 1996 based on 1993-94 prices, hence called 1993-94 series. Thereafter 2004-05 and 2011-12 series of GDDP figures were released. Now we have data of GDDP for 27 years from 1993-94 to 2019-20. Though the methodology of estimating GDDP in Tamil Nadu has not changed since 1993, the database changes for every new series such as demographic data and addition of new sectors in economy. Creating an unified series of data from the three-series-GDDP database is difficult as we do not have conversion factors, as such, throughout this analysis we take the GDDP and its components in current prices in their respective series. The comparison between the three series of GDDP is only in relative terms, that is, the relative contributions of districts' GDDP to GSDP of Tamil Nadu.

Since we compare the GDDP over time, it is ideal to calculate the relative positions of districts based on real GDDP, that is, GDDP at constant prices. The real GDDP is not comparable across series and that even within a series because the real GDDP is not reflecting the real value as noted in the previous section. Hence, we take only the GDDP at current prices in each series of GDDP for our analysis, as we deal only with ratios and relative positions of districts. Comparison of relative contribution over different time periods is better than the comparison of GDDP at current prices over time.

We compare the three-year average of GDDP of 29 districts for years 1993-96, 2004-07 and 2017-20. In the first and second series, we have taken the first three-year data and in the last series we have taken the latest three-year data for this average GDDP. In 2004-05 and 2011-12 series, the number of districts was 32 compared to 29 districts in 1993-94 series. This is due to bifurcation of three districts after 1991. Therefore, we have summed up the GDDP of the bifurcated districts to get the GDDP of 29 districts that prevailed in 1991 in 2004-05 and 2011-12 series also. We have also calculated the population from respective series level data on per capita GDDP. The data on GDDP are given in Table 1 and the entire GDDP database of three series are given in Appendix I.

In the first series, that is , 1993-97 series, we have arranged the districts in descending order of GDDP and the corresponding rank and population for the series are also given. Apparently the relative positions of districts in each period have changed compared to the previous period. A closer look at the change in the relative positions are not drastic enough to consider the spatial change in growth pattern.

If we classify districts by four quartiles – first three quartiles of 7 districts each and the fourth quartile with 8 districts. We find the relative positions of districts change within each quartile, but rarely change between quartiles. For instance, compare the first quartile, that is, the top seven districts in 1993-97 series with the ranks of such districts in 2004-07 series. We find only Erode, which was in first quartile in 1993-94 moved to second quartile (2004-07), while in the third series (2017-20) Erode is back in first quartile, while Salem moved to second quartile with 9th rank.

Let us compare the eight districts in the fourth quartile in 1993-94 with the eight districts in the fourth quartile in the two other series. We find all the districts in the 1993-94 of fourth quartile remain in the fourth quartile in the two other series, only their relative positions within the quartile have changed.

In the second and third quartiles, only two districts shift between quartiles and five districts remain in the same quartile in all the three series. In a reasonably broad spectrum of seven-district quartiles, the relative positions of districts have not changed significantly between the spectrums in these 27 years.

The last column in Table 1 gives the change in percentage points in the relative share of each district between 1993-97 and 2017-20⁴. We find only seven out of 29 districts have more than one percentage point difference in the relative share of their GDDPs over the 27 years. That is, over 27 years, the relative shares of most of the districts have almost remained same or the change has been less than one percentage point. Thus it appears, the regional structure of Tamil Nadu economy in terms of relative size of district economies has not changed a little for nearly three decades. However, we should also note that four out of 7 districts in first quartile and three out of seven districts in second quartile have shown more than one percentage point change in their relative shares of GDDP to GSDP. Though in the third and fourth quartiles all districts have shown less than one percentage point change in their relative shares, and the changes are mostly in the negative.

⁴The change in percentage points in relative shares of a district is the change in its percentage share in 2017-20 over 1993-94. For instance the relative share of Chennai's GDDP to GSDP in 2017-20 was 8.3 per cent compared to 11.2 per cent in 1993-97, thus a decline of 2.9 percentage points.

Table 1: GDDP in Tamil Nadu– 1993-96, 2004-07 and 2017-20

District	1993-94 to 1995-96 (Rs Lakh)	Rank	2004-05 to 2006-07 (Rs Lakh)	Rank	2017-18 to 2019-20 (Rs Lakh)	Rank	Change in percentage points in relative share difference between 1993-97 and 2017-20
Chennai	763437	1	2180183	2	13528553	3	-2.9
Coimbatore	619645	2	2566805	1	18096073	1	2.0
Kancheepuram	363705	3	1423880	5	11683528	4	1.8
Vellore	363180	4	1428819	4	8434525	5	-0.2
Thiruvallur	331800	5	1507857	3	14926564	2	4.3
Salem	314626	6	1244136	6	6580623	9	-0.6
Erode	306469	7	1144094	8	7344526	7	0.0
Thirunelveli	295296	8	1173788	7	5764940	11	-0.8
Madurai	270385	9	1135323	9	6120857	10	-0.2
Virudhunagar	266633	10	1042852	12	4676915	13	-1.0
Tiruchirapalli	230632	11	1073520	11	7123676	8	1.0
Dharmapuri	215660	12	1080376	10	8061964	6	1.8
Thoothukudi	207778	13	860085	14	3968238	18	-0.6
Dindigul	202097	14	730383	17	3777107	19	-0.6
Villupuram	197836	15	704720	19	4323193	16	-0.3
Namakkal	188001	16	750831	16	5272190	12	0.5
Cuddalore	187956	17	830920	15	4593078	14	0.1
Thanjavur	177446	18	706286	18	4290476	17	0.0
Kanniyakumari	173348	19	896906	13	4407338	15	0.2
Thiruvannamalai	153280	20	576357	20	3042350	20	-0.4
Nagapatinam	136174	21	463181	21	2124854	23	-0.7
Theni	134904	22	337884	26	1906485	25	-0.8
Perambalur	124411	23	204365	29	1698336	27	-0.8
Pudukkottai	112256	24	446653	22	2364511	21	-0.2
Thiruvarur	105686	25	284710	27	1475410	29	-0.6
Ramanathapuram	100531	26	392072	24	1955463	24	-0.3
Karur	95180	27	418660	23	2248951	22	0.0
Sivagangai	91804	28	364141	25	1751813	26	-0.3
The Nilgiris	83852	29	275628	28	1540421	28	-0.3
Tamil Nadu	6814008		26245413		163082959		

Source: Author's calculation based on the data collected from Department of Economics and Statistics, District Income Estimates, Estimation of GDDP in Tamil Nadu, Various issues.

When the relative sizes of districts' economies remaining the almost same or marginally changed over three decades, does it mean that all the districts grow at the same rate? Given the incomparable three series of GDDP data, we resort to another method to explore this aspect of GDDP. We give in Table 2 the aggregate data of GDDP in the four quartiles. We reiterate a point from Table 1, that is, at least five out of seven districts in each quartile remain the same across the three series, therefore, it can be reasonably presumed that each quartile across the three series represents the same economic region. A comparison of the GDDP and Population of each quartile is shown in Table 2.

Table 2: GDDP and Population –Quartile Values: 1993-96, 2004-07 and 2017-20

Quartiles	1993-97		2004-07		2017-20	
	GDDP (Rs Lakh Crore)	Population (Lakh)	GDDP (Rs Lakh Crore)	Population (Lakh)	GDDP (Rs lakh Crore)	Population (Lakh)
I	0.31 (45.0)	208.10 (35.7)	1.15 (43.9)	254.12 (39.1)	8.21 (51.8)	305.27 (41.9)
II	0.17 (24.8)	146.76 (25.2)	0.72 (27.6)	154.40 (23.8)	3.55 (22.4)	163.49 (22.4)
III	0.12 (17.8)	137.14 (23.6)	0.48 (18.1)	149.55 (23.0)	2.62 (16.5)	160.70 (22.0)
IV	0.08 (12.4)	91.37 (15.7)	0.27 (10.4)	91.21 (14.0)	1.47 (9.3)	99.52 (13.7)
Total	0.68	583.34	2.62	649.28	16.31	755.48

Note: Figures in parentheses are percentage to total.

Source: Same as Table 1.

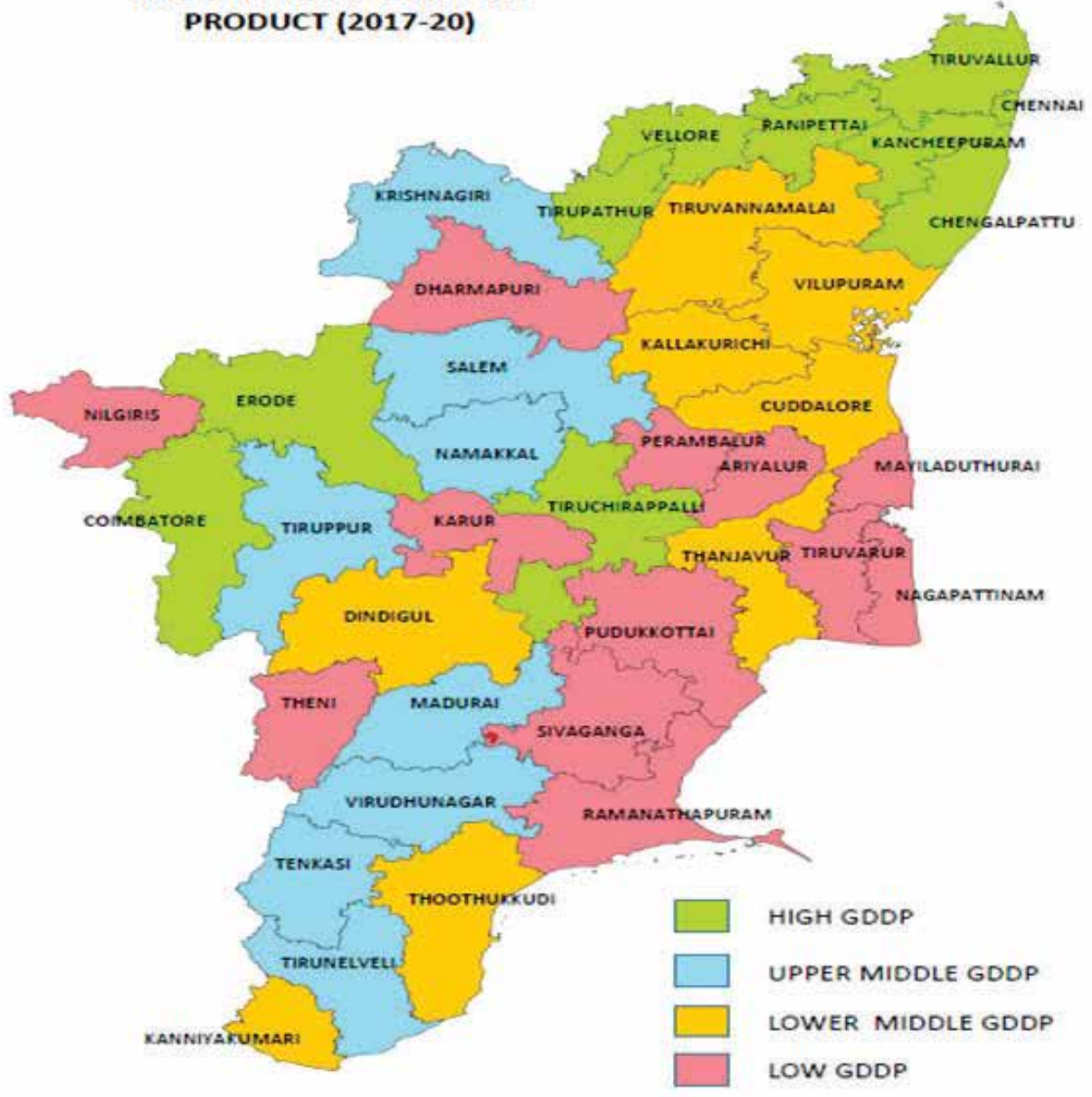
In the first quartile, the GDDP as a ratio to state's GSDP increased from 45 per cent in 1993-97 to 51.8 per cent in 2017-20 after a dip to 43.9 per cent in 2004-07. In the next two quartiles the relative shares of GDDP to GSDP declined between 1993-97 and 2017-20 with a marginal increase in 2004-07. However, the last quartile shows a secular decline in the three successive periods. As the relative contribution of the districts' GDDP to GSDP in first quartile increases over time, those districts also attract population; as such the proportion of population in the districts in first quartile increased and the corresponding figures in the districts in three other quartiles show consistent decline. Economic growth attracts people and people contribute further to growth. This trend in the concentration of economic growth and population in a few districts is the sign of irreversible imbalance in regional growth if left unchecked in the years to come.



To visualise the geographical spread of growth in the state, we take the last three-year average GDDP (2017-20) of 2011-12 series and classified the districts by quartiles. The original database has only 32 districts, whereas now there are 38 districts in the state as some of the districts have been bifurcated or even trifurcated. Therefore, the districts that were split into two or three districts are all considered to be in the same level of development in the Map-1. As the legend in the Map-1 specifies, the High GDDP districts are shaded in Green, Blue ones are Upper middle GDDP districts, Amber ones are Lower-middle GDDP districts, and low GDDP districts are shaded in Red. We find the High GDDP districts are located in the north and northwest and the lone exception of Thiruchirapalli in the central Tamil Nadu. The Upper-middle GDDP districts are in the north-west and south Tamil Nadu. If we combine the districts with High and Upper-middle GDDP, we find them as contiguous districts, may be economic growth is geographically contagious. Of course, the notable exceptions in this combined category are Dharmapuri and The Nilgiris. The districts with Lower-middle GDDP are located predominantly in the Cauvery delta and three districts in south Tamil Nadu. The districts with low GDDP are spread in north-west, delta and southern Tamil Nadu. Obviously if we combine districts with lower-middle and low GDDP most of them form geographically contiguous set of districts.

As we have noted earlier, GDDP captures value addition in each districts and also that the factors of production are mobile between districts, particularly labour and financial capital, which means that the productive activities are attracted to various locations for historical reasons and availability of infrastructure services. Economic activities cannot restricted by administrative boundaries within a district. Instead of creating district-wise incentive system, we need to create zonal approach to infrastructure development and installation of industrial ecosystems cutting across a group of contiguous districts. Therefore creating suitable ecosystems for different sectors in districts should help spread of economic activities across districts that are contiguous and can be classified as a zone. The mapping of sectors across districts should be helpful in this regard.

TAMIL NADU
GROSS DISTRICT DOMESTIC
PRODUCT (2017-20)



Map 1: Districts-Wise Classification Based on GDDP

Section 3: Sectoral Contributions to District and Zonal Incomes

We take only the 2011-12 series of GDDP as the analysis of GDDP in the recent years should suffice the purpose of the understanding the trend in sectoral contributions to GDDP. First we take the three broad sectors – primary, secondary and tertiary. The shares of primary, secondary and services sectors in state GVA changed marginally between 2011-12 and 2019-20. The share of primary sector declined from 13.1 percent in 2011-12 to 11.5 per cent in 2019-20. The shares of secondary and services sectors increased marginally from 36.6 per cent to 37.7 percent and 50.5 per cent to 50.9 per cent respectively. Given the greater importance of secondary and services sectors in state GVA, to need to find out their relative importance in the districts' GVA.

The correlation coefficients of GVA from the three sectors with the District GVA along with the coefficient of variation of the three sectors' GVAs calculated for the nine years are given in Table 3⁵. The correlation coefficients of secondary and services sectors are high and almost closer to one; whereas the correlation coefficients of primary sector is nearly zero. Therefore, the secondary and services sectors have strong association with the district GVA. If we look at the coefficient of variations of the three sectors, once again the secondary and services sectors show higher level of variation than the primary sector. The primary sector having low share in the GVA and its coefficient of variation with GVA is also very low, together explain the fact, that the absolute value of GVA from primary sector may not vary between districts, but their relative values change markedly. On the contrary, the contributions of GVAs from secondary and services sectors to the district GVAs are larger and they vary substantially both in absolute and relative values. Therefore it comes out very strongly that the secondary and tertiary sectors are the moving forces of GVA across districts.

Table 3: Coefficients of Correlation and Variation between sub-sectors of District GVA 2011-12 to 2019-20

Year	Coefficient of Correlation between sub-sectors' GVA and district GVA			Coefficient of Variation of sub-sectors' GVA (%)		
	Primary	Secondary	Tertiary	Primary	Secondary	Tertiary
2011-12	0.02	0.86	0.92	51.4	87.5	92.0
2012-13	0.09	0.86	0.93	56.5	82.5	90.7
2013-14	0.08	0.86	0.93	57.9	84.9	89.6
2014-15	0.06	0.86	0.95	53.0	84.8	89.3
2015-16	0.07	0.87	0.94	56.7	87.4	89.0
2016-17	0.08	0.88	0.94	66.4	88.1	87.8
2017-18	0.07	0.87	0.93	60.4	91.0	88.7
2018-19	0.09	0.87	0.93	69.0	91.3	87.9
2019-20	0.10	0.86	0.93	69.1	93.1	88.8

Source: Same as Table 1.

⁵The GDDP of 2011-12 series gives the GVA of each sector and then the District GVA. The GVA is net of GDDP by taxes and subsidies. That is, $GVA = GDDP - Tax + Subsidies$. The previous GDDP series, that is, 1993-94 and 2004-05 series, do not give this distinction between GVA and GDDP.

In the previous section we grouped the districts by quartiles and found that the districts within each quartile do not change over time though their relative positions within a quartile may change. However, the districts in each quartile are not geographically contiguous. For a regional development plan, we need to plan for a region with geographically contiguous districts. Therefore, we divide the districts by zones as North, West, East and South with geographically contiguous districts in each zone. This hypothetical exercise is only to highlight the possibility of identifying regional growth centre and their potentials for further development. The list of districts and their quartile ranking are given in Table 4.

Table 4: Classification of Districts by Zones and Quartiles

North Zone	West Zone	East Zone	South Zone
Chennai (Q1)	Trichy(Q1)	Cuddalore(Q3)	Madurai(Q2)
Kanchipuram(Q1)	Erode(Q1)	Villupuram(Q3)	Virudhunagar(Q2)
Tiruvallur(Q1)	Coimbatore(Q1)	Tanjore(Q4)	Tirunelveli(Q2)
Vellore(Q1)	Tirupur(Q2)	Nagapattinam(Q4)	Thoothukudi(Q4)
Krishnagiri(Q2)	Salem(Q2)	Thiruvarur (Q4)	Kanyakumari(Q4)
Dharmapuri(Q4)	Namakkal(Q2)	Perambalur(Q4)	Theni(Q4)
Tiruvannamalai(Q3)	Nilgiris(Q4)	Ariyalur(Q4)	Dindigul(Q4)
	Karur(Q4)	Pudukottai(Q4)	
		Ramanathapuram(Q4)	
		Sivagangai(Q4)	

TAMIL NADU DISTRICTS BY DEVELOPMENT ZONES



Map 2: Districts-Wise Classification of GDDP and Population

You may find that most of the districts in each zone are from two continuous quartiles. The variation in the district's income within a zone is so low that we can conveniently categorise each zone as contiguous districts with more or less same level of development. Of course, there are exceptions. North zone has a district from bottom three quartiles with three districts in the first quartile. The West zone has three districts from each of the first two quartiles and two districts from the fourth quartile.

The relative positions of each zonal division in terms of economy, per capita income and population over a three-year period of 2017-2020 are given in Table 5. The Northern zone with the highest size of economy of 36.6 per cent of GSDP and 31.8 per cent state population is the largest in terms of economy and demography. West zone comes next in terms of economy and demography with 29.6 per cent of state economy and 22.8 per cent of state population. The per capita income of West zone is a little higher at 118 per cent of state per capita income than 115 per cent per capita income of the Northern zone, mainly because of relatively lower proportion of population. The South zone has the third largest economy of 18.8 per cent of state GSDP and 20.5 per cent state population. The East zone has 15.1 per cent of state GSDP and 25.5 per cent of state population, making it the lowest in terms of size of economy and per capita income.

Table 5: GDDP and Population of Zonal Divisions – 2017-20 at Current Prices

Zones	GDDP at current prices (Rs Lakh Crore)	Per capita income (Rs)	Population (In Lakh)
North	5.97 (36.6)	248614 (115.0)	240 (31.8)
East	2.46 (15.1)	143166 (66.3)	172 (25.0)
West	4.82 (29.6)	254911 (118.0)	189 (22.8)
South	3.06 (18.8)	197003 (91.7)	155 (20.5)
Total	16.31	215866	755

Note: Figures in brackets are per cent to the column total

Source: Same as Table 1.

We move on to analyse the relative shares of the 17 sub-sectors to the zonal GVA over three-year period from 2017-18 to 2019-20. In the North and West Zones, only three sectors have contribution of more than 10 per cent each and together they contribute for more than 50 per cent of zonal GVA; they are (i) Manufacturing, (ii) Trade, repair services, Hotels and Restaurants and (iii) Real estate, ownership of dwellings and business services. This shows that the GVA is skewed towards just three sectors in these two zones. Next to these three sub-sectors, construction and other services are the two sub-sectors that contribute substantially to their respective zonal GVA. The peculiarity of West zone is its higher contribution from agriculture and livestock compared to North zone. Similarly the North zone has higher contribution from financial service compared to West zone.

In the East and South zones, there are six sub-sectors that contribute more than 10 per cent each and together they contribute more than 60 per cent of the zonal GVA; they are (i) Agriculture, (ii) Manufacturing, (iii) Construction, (iv) Trade, repair services, Hotels and Restaurants and (v) Real estate, ownership of dwellings and business services and (vi) other services. In these two zones, the economy is more well-spread in terms of sub-sectoral contributions to zonal GVA compared to North and West zones.

Table 6: Sub-Sectoral shares in GVA by Four Zones Zonal GSDP in Tamil Nadu for 2017-20
(GVA Value Rs.in Lakh Crore)

Sub-Sectors	North	West	East	South
Agriculture	20.02 (3.68)	22.71 (5.17)	23.34 (10.42)	18.18 (6.52)
Livestock	13.39 (2.46)	43.65 (9.94)	10.26 (4.58)	8.03 (2.88)
Forestry & Logging	1.93 (0.35)	16.74 (0.38)	22.84 (1.02)	1.47 (0.53)
Fishing	2.11 (0.39)	24.21 (0.06)	66.46 (2.97)	2.41 (0.86)
Mining & Quarrying	0.07 (0.01)	0.22 (0.05)	5.11 (2.28)	0.33 (0.12)
Manufacturing	127.17 (23.38)	109.61 (24.95)	24.10 (10.76)	52.78 (18.91)
Electricity, Gas, Water Supply & Other utility services	9.83 (1.81)	8.00 (1.82)	4.37 (1.95)	7.17 (2.57)
Construction	48.55 (8.93)	40.91 (9.31)	31.80 (14.28)	41.02 (14.70)
Trade, Repair services, Hotels & Restaurants	57.04 (10.49)	55.34 (12.60)	31.32 (13.99)	42.40 (15.19)
Railways	2.17 (0.40)	4.20 (0.96)	0.16 (0.07)	0.27 (0.10)
Transport by Other means	21.89 (4.02)	15.13 (3.44)	9.82 (4.39)	10.76 (3.86)
Storage	0.47 (0.09)	8821 (0.02)	8373 (0.04)	0.13 (0.05)
Communication & Services related to Broadcasting	9.15 (1.68)	6.39 (1.46)	3.53 (1.58)	5.55 (1.99)
Financial Services	48.18 (8.86)	18.19 (4.14)	7.30 (3.26)	9.71 (3.48)
Real Estate, Ownership of Dwelling and Business Services	122.45 (22.51)	62.50 (14.23)	35.46 (15.83)	38.23 (13.70)
Public Administration	212.92 (3.92)	7.85 (1.79)	7.34 (3.28)	9.71 (3.48)
Other Services	381.35 (7.01)	42.61 (9.70)	20.87 (9.32)	30.90 (11.07)
Total	543.86 (100)	439.33 (100)	223.98 (100)	279.07 (100)

Note: Bracket in the parentheses are percentage to the total GVA.

Source: Same as Table 1.

Having identified the relative shares of sub-sectors in the zonal GVA, we should be able to conceptualise regional plans by sectors. Sectors such as Manufacturing, Trade, repair services, Hotels and Restaurants should be planned for all the four zones, however, drilling down to specific sectors within each of these sub-sectors should help to fine-tune the development strategies for these zones. There are also zonal specific sectors such as agriculture in West, East and South and livestock in West, Financial services in North, and so on.

This exercise with limited database of GDDP and its components show that both sectoral and spatial patterns of development are discernible in Tamil Nadu. With databases derived from other sources, particularly from the sectoral databases should help us to study the spatial spread of growth centres and their economic characteristics in greater detail and derive lessons for strategic regional economic plans.

Section 4: Summary and the Way Forward

The methodology for estimation of GSDP and GDDP has long been waiting for effective revision. With the Dholakia Committee report and the availability of new databases and statistical tools, the Government of Tamil Nadu can independently initiate the implementation of revisions in the methodology to give a robust and realisable state income statistics.

The analysis of the GDDP of districts in Tamil Nadu over a period of nearly three decades, indicates that the distribution of spatial and sectoral growth in Tamil Nadu is skewed and the skewness is increasing. The districts of high economic growth attract larger population and hence the demographic transition varies between districts. There is a regional pattern of growth in Tamil Nadu and districts in the top quartile in terms of GDDP are in North and Western Tamil Nadu. The districts in the lowest quartile are in the East and Southern Tamil Nadu. Given this spatial pattern of growth we can classify districts by geographically contiguous districts that have more or less comparable levels of economic development. Therefore our classification of districts as North, West, East and South, make our analysis of sub-sectoral contribution more meaningful. In this analysis we could identify the larger sub-sectors that contribute to the zonal economies and their relative importance for any further intervention.

We have given only a partial story of regional imbalance in economic growth with the GDDP database. The detailed database from all the sectors from various sources should help by a great deal to analyse the specific reasons for growth or for the lack of it. Continuous tracking of the sectoral performance in all the regions over time should be a good feedback for strengthening public policies and programmes.

There are several theoretical explanations for the skewed distribution of economic growth by region and sectors. Historical accidents may often be a reason for the growth of many modern sectors in specific locations. Economic and social infrastructure, considered as an exogenous factor in private sector development until recently, have become an endogenous factor in the conceptualisation and practice of new public finance management. With full play of market forces and government's decision to reap economic benefits of public expenditures, concentration of infrastructure facilities in developing/developed regions is unavoidable. Conscious decisions to spread at least the basic public utilities to all areas as a priority, followed by development of infrastructure facilities to expand

economic opportunities for all the regions should guide the economic policies, if we need to correct regional imbalances in growth.

One of the pioneering efforts to address regional imbalance was taken in Maharashtra in 2013. Dr Vijay Kelkar, Chairman of Thirteenth Finance Commission, headed a committee to prepare a road map for attaining regional balance in socio-economic development in Maharashtra. The report submitted by the Kelkar Committee gave many new ideas in this regard. The general philosophy of the committee's recommendations was to create an index of development deficit in each sector and in each region and then allocate public expenditure based on such deficit indicators. There are also recommendations for sequencing sectoral intervention in regions. A similar effort in Tamil Nadu shall bear some fruits. Regional balance cannot take a back seat in democracy.

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Appendix-1

Table 1: Tamil Nadu District-Wise Gross District Domestic Product (GDDP) at Current Prices (1993-94 to 2001-02).

S. No	District	GDDP (1993-94 to 2001-02) [BASE YEAR -1993-94] At Current Prices - (Rs.in Lakhs)									
		1993-94	1994-95	1995-96	1996-97	1997-98	1998-99	1999-2000	2000-01	2001-02	
1	Chennai	627735	767418	895159	1025000	1226154	1376157	1516879	1593800	1649076	
2	Kancheepuram	303133	364205	423778	486716	558743	640693	701635	834045	850851	
3	Thiruvallur	277669	332639	385093	446157	508615	593944	643998	704501	718298	
4	Vellore	284924	334022	470593	456996	510056	598512	624191	671351	688336	
5	Thiruvannamalai	135287	158520	166034	204980	256268	280962	274123	304123	323839	
6	Cuddalore	165291	186059	212518	225319	283188	306215	328617	372441	396619	
7	Villupuram	171073	205777	216658	260420	276481	345165	356458	378348	393287	
8	Thanjavur	149751	185921	196665	229642	293628	312216	328740	377409	373839	
9	Nagapatinam	115159	144022	149341	167674	219257	229524	261624	295565	289109	
10	Thiruvarur	89576	112301	115180	124363	224094	170152	178649	215882	201728	
11	Salem	266545	312516	364818	422515	514512	561897	618883	651490	638938	
12	Namakkal	163497	185599	214906	236602	326371	314982	355871	373171	359764	
13	Dharmapuri	182835	214000	250144	274812	297204	393700	395014	433984	447319	
14	Krishnagiri	-	-	-	-	-	-	-	-	-	
15	The Nilgiris	75135	80615	95807	111315	126423	143917	150412	156637	166015	
16	Tiruchirapalli	195811	225038	271046	300646	317370	393458	424118	482248	481222	
17	Karur	81442	92644	111453	124872	152257	158579	165803	197277	191617	

S. No	District	GDDP (1993-94 to 2001-02) [BASE YEAR -1993-94] At Current Prices - (Rs.In Lakhs)										
		1993-94	1994-95	1995-96	1996-97	1997-98	1998-99	1999-2000	2000-01	2001-02		
18	Perambalur	106989	120835	145408	158584	201774	199015	222052	228824	233625		
19	Ariyalur	-	-	-	-	-	-	-	-	-		
20	Pudukkottai	96747	115732	124288	151276	167325	202858	212529	241708	253407		
21	Coimbatore	511297	638096	709543	836773	857829	1033418	1130802	1317238	1346814		
22	Thiruppur	-	-	-	-	-	-	-	-	-		
23	Erode	259540	310118	349748	418624	421988	546737	579142	644127	651206		
24	Madurai	226888	273904	310364	370910	433135	511112	534317	594305	602036		
25	Theni	115107	138456	151148	187530	241421	238800	249819	276198	293712		
26	Dindigul	170093	208612	227585	257402	274310	367563	387155	425319	421393		
27	Ramanathapuram	89042	103944	108607	137642	174913	205903	199973	231664	235157		
28	Sivagangai	84560	96099	94752	119128	140607	167573	171540	194771	200327		
29	Virudhunagar	227650	270277	301971	335593	402600	420282	457180	587170	584543		
30	Thirunelveli	253717	302312	329858	369836	408850	489951	522533	570961	593418		
31	Thoothukudi	178338	214205	230790	264546	286915	330877	349913	405378	417884		
32	Kanniyakumari	150071	172693	197279	217862	252746	286756	302919	350976	348274		
	Tamil Nadu	5754902	6866579	7820534	8923735	10355034	11820918	12644889	14110911	14351653		

Source: District Income Estimates, Department of Economics and Statistics, Tamil Nadu.

Table 2: Tamil Nadu District-Wise Gross District Domestic Product (GDDP) at Current Prices (2004-05 to 2011-12).

S. No	District	GDDP (2004-05 to 2011-12) [BASE YEAR -2004-05] At Current Prices - (Rs.In Lakhs)									
		2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12		
1	Chennai	1905771	2139123	2495655	2769433	3128117	3480466	4090336	4547841		
2	Kancheepuram	1176866	1380592	1714183	1940728	2432859	2933780	3765722	4512061		
3	Thiruvallur	1218558	1498263	1806750	2103531	2444247	3112764	3713204	4284756		
4	Vellore	1192054	1387392	1707012	1945433	2193498	2654693	3238746	3711070		
5	Thiruvannamalai	485380	571345	672345	809304	897051	1033018	1278371	1491978		
6	Cuddalore	720479	796112	976168	1099319	1268997	1538128	1838589	2087392		
7	Villupuram	600786	699415	813958	948569	1095520	1319234	1577812	1786407		
8	Thanjavur	599320	695443	824094	922138	1052448	1180236	1425535	1666259		
9	Nagapatinam	373036	444999	571509	567971	639880	778006	893914	1036987		
10	Thiruvarur	239114	270734	344283	370167	404271	480787	511465	647411		
11	Salem	1037534	1228193	1466680	1660374	1890717	2207656	2689454	3055776		
12	Namakkal	618815	729480	904197	1033338	1177882	1473710	1730078	1947433		
13	Dharmapuri	371755	461279	564719	668804	766200	942248	1202570	1401638		
14	Krishnagiri	486045	606969	750360	869866	1037065	1304173	1657355	1928405		
15	The Nilgiris	247517	259780	319587	351365	425941	502071	566312	630904		
16	Tiruchirapalli	889696	1055026	1275838	1471293	1743863	2141114	2536134	2897558		
17	Karur	348600	402488	504892	538221	639411	783832	921398	1065552		

S. No	District	GDDP (2004-05 to 2011-12) [BASE YEAR -2004-05] At Current Prices - (Rs.In Lakhs)									
		2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12		
18	Perambalur	76920	85871	99127	107928	122771	145034	174237	223948		
19	Ariyalur	101058	116863	133255	139187	167124	192647	218656	252802		
20	Pudukkottai	373699	450981	515278	579425	654199	783557	922614	1083197		
21	Coimbatore	1270940	1494037	1806777	2120112	2379102	2827061	3571142	3953569		
22	Thiruppur	867142	1023648	1237870	1477176	1689716	2114536	2723871	3050329		
23	Erode	959777	1135988	1336516	1587166	1658886	2000356	2687373	2898945		
24	Madurai	917393	1075893	1412683	1429397	1648398	1923542	2335668	2662586		
25	Theni	294086	338527	381040	413469	470194	572695	662691	735038		
26	Dindigul	626051	708996	856103	950122	1099915	1300012	1600823	1789912		
27	Ramanathapuram	324862	377303	474050	483107	556623	609237	720805	817600		
28	Sivagangai	308612	374277	409534	462298	544219	632458	774919	905788		
29	Virudhunagar	858966	1018388	1251202	1307972	1458370	1782172	2152995	2447217		
30	Thirunelveli	969397	1210958	1341008	1597042	1727547	2008394	2396815	2702414		
31	Thoothukudi	718280	845563	1016412	1081061	1225477	1423444	1645256	1885940		
32	Kanniyakumari	721813	899418	1069488	1276547	1493097	1792279	2264765	2611454		
	Tamil Nadu	21900322	25783345	31052573	35081864	40133605	47973342	58489626	66720168		

Source: District Income Estimates, Department of Economics and Statistics, Tamil Nadu.

Table 3: Tamil Nadu District-Wise Gross District Domestic Product (GDDP) at Current Prices-2011-12 to 2019-20.

S. No	District	GDDP (2011-12 to 2019-20) [BASE YEAR -2011-12] At Current Prices - (Rs.In Lakhs)									
		2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	
1	Chennai	7476264	8144002	9096847	9930913	10355930	10980430	12334797	13499621	14751242	
2	Kancheepuram	6027608	6687004	7343587	7969979	8958900	9935957	10815885	11560160	12674540	
3	Thiruvallur	5321543	6478832	7526552	8568503	10006287	11554720	13292890	14805587	16681216	
4	Vellore	4069496	4654906	5246244	5742085	6319875	6945995	7679709	8454151	9169716	
5	Thiruvannamalai	1477895	1786175	1901738	2111728	2221112	2363548	2740104	2964049	3422897	
6	Cuddalore	2055173	2398783	2817369	3207953	3409608	3719724	4192711	4580577	5005947	
7	Villupuram	1967572	2287903	2846096	3131251	3239225	3353051	3921382	4322223	4725974	
8	Thanjavur	1730384	1958568	2332651	2532497	2803944	3305537	3738630	4234731	4898067	
9	Nagapatinam	1285909	1303276	1538727	1582997	1797840	1980914	1898926	2112055	2363582	
10	Thiruvaurur	746915	699554	979774	1075834	1098149	1008019	1388525	1478680	1559025	
11	Salem	3633938	3721589	4156305	4629139	5129868	5783076	6481493	6409345	6851030	
12	Namakkal	2368319	2593611	3084969	3289272	3535093	4104526	4311496	5506240	5998834	
13	Dharmapuri	1248122	1330064	1514407	1653615	1892710	2177617	2422173	2692925	3151068	
14	Krishnagiri	2254236	2595586	3013202	3264960	3719955	4214517	4930654	5327745	5661328	
15	The Nilgiris	670552	802390	910040	980882	1087310	1244518	1360634	1558952	1701676	
16	Tiruchirapalli	3650730	4014852	4529882	4957964	5340616	5795064	6477403	7175617	7718009	
17	Karur	1149154	1242796	1468456	1635888	1777080	2008761	2271041	2154142	2321669	

S. No	District	GDDP (2011-12 to 2019-20) [BASE YEAR -2011-12] At Current Prices - (Rs.In Lakhs)										
		2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20		
18	Perambalur	325397	316407	417381	461322	456207	458740	554711	570576	624966		
19	Ariyalur	481491	512397	641183	723431	743492	866136	1009475	1111264	1224015		
20	Pudukkottai	1185025	1287076	1387633	1597378	1675222	1819104	2074138	2326846	2692550		
21	Coimbatore	4163866	5034123	5896849	6625228	7662333	8667503	10124501	11930372	13652321		
22	Thiruppur	3073106	3342665	3796387	4107866	4486390	4944239	5424993	6342379	6813652		
23	Erode	2706207	3228263	3787557	4277179	4906920	5521400	6414394	7381438	8237746		
24	Madurai	2731326	3119392	3619920	4027742	4401217	4829049	5439323	6069365	6853883		
25	Theni	912216	1042470	1163637	1273044	1401981	1606323	1695327	1915698	2108430		
26	Dindigul	1808226	2046282	2251353	2602548	2754216	2952385	3346353	3834304	4150663		
27	Ramanathapuram	933615	1041999	1116172	1335239	1356430	1441097	1740070	1930495	2195823		
28	Sivagangai	919198	1144563	1108132	1252796	1314223	1395885	1541263	1763124	1951052		
29	Virudhunagar	2094314	2481877	2816362	3102918	3444487	3870292	4216751	4770390	5043604		
30	Thirunelveli	2839951	3371279	3656155	4070599	4394733	4849737	5337363	5810818	6146640		
31	Thoothukudi	1922941	2623237	2391098	2686176	2845218	3083331	3510189	4000625	4393901		
32	Kanniyakumari	1917886	2190616	2496381	2858870	3113432	3482664	3817787	4426422	4977804		
	Tamil Nadu	75148576	85482535	96853045	107267797	117650003	130263858	146505091	163020915	179722872		

Source: District Income Estimates, Department of Economics and Statistics, Tamil Nadu.

State Planning Commission

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