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Spatial and temporal dimensions of State GDP vis-a-vis agricultural growth in Telangana State - District Level Analysis

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Abstract

The performance of agriculture plays a crucial role in shaping the growth trajectory of India's economy, particularly at the state and district levels. Telangana, being an agrarian state with diverse economic structures, has experienced significant transformation in both Gross State Domestic Product (GSDP) and Agricultural Gross Domestic Product (Ag. GDP) since its formation. This study examines the spatial and temporal dimensions of agricultural and overall GDP growth in Telangana at the district level between 1993-94 and 2019-20. Using splicing techniques to harmonize base years, Compound Annual Growth Rates (CAGR) were estimated, and incremental contributions across time periods and districts were analyzed. The results indicate that Telangana achieved higher agricultural growth compared to the national average, especially during 2003-04 to 2013-14 and in the post-2014 period, with substantial district-level variations influenced by policy interventions, irrigation investments, and favorable climatic conditions.

Keywords: Agricultural Gross Domestic Product (Ag. GDP), economic growth, agrarian transformation, Telangana economy.

Introduction

Agriculture continues to play a pivotal role in the Indian economy by providing employment, ensuring food security, supplying raw materials to industries, and supporting rural livelihoods. Although the contribution of agriculture to the national Gross Domestic Product (GDP) has gradually declined with structural transformation of the economy, the sector remains crucial for sustaining economic growth and social stability. The development strategy adopted in India since the mid-1960s, including expansion of irrigation infrastructure, increased use of modern farm inputs, strengthening of agricultural research and extension systems, institutional credit expansion, and price support policies, has significantly transformed Indian agriculture from a subsistence-oriented sector into a more commercialized and technology-driven enterprise (Acharya, 1998; Ramachandran and Swaminathan, 2005; Janaiah and Mohanty, 2018) ^[1, 7, 3].

The growth performance of Indian agriculture has varied across different periods. Rao and Deshpande (1986) ^[8] reported that agricultural output growth accelerated during the Green Revolution period despite limited expansion in cultivated area. Similarly, Subrahmanyam and Shekar (2003) ^[12] observed improvements in aggregate agricultural output primarily due to productivity gains arising from technological innovations. However, agricultural growth has

not been uniform across regions and periods, owing to variations in resource endowments, irrigation development, infrastructure availability, policy interventions, and climatic conditions. Tripathi and Prasad (2009) ^[10] noted that agricultural growth during the post-2000 period was substantially higher than that recorded during the earlier decades of the Green Revolution, largely due to enhanced public investment, improved market support, and favorable production conditions.

Telangana, which emerged as a separate state in June 2014, provides an important case for examining the dynamics of agricultural and overall economic growth. Historically, the region was characterized by inadequate irrigation facilities, regional disparities, and agrarian distress (Simhadri and Rao, 1997; Reddy and Bantilan, 2013) ^[11, 9]. Following state formation, agriculture received considerable policy attention through large-scale investments in irrigation infrastructure, provision of 24-hour free electricity to agriculture, debt waiver programmes, the Rythu Bandhu investment support scheme, and Kisan Bima insurance programme. These initiatives were aimed at improving agricultural productivity, enhancing farm incomes, and reducing agrarian distress.

The state possesses considerable agricultural potential owing to its diverse agro-climatic conditions, fertile soils, and irrigation systems supported by the Godavari and

Krishna river basins. Recent years have witnessed substantial expansion in cropped area, irrigation coverage, and production of major crops such as paddy and cotton. Nevertheless, the extent to which these developments have translated into sustained agricultural GDP growth and contributed to the overall economic growth of the state remains an important empirical question. Radhakrishna and Mishra (2019) [6] reported relatively modest growth in agricultural Gross Value Added during the initial years following state formation, highlighting the need for a detailed assessment of growth patterns and their underlying drivers.

Economic growth is inherently uneven across time and space. Temporal variations arise from changes in policy regimes, technological progress, investment levels, and climatic conditions, while spatial variations reflect differences in resource availability, infrastructure, irrigation development, and market access across districts. Therefore, examining both temporal and spatial dimensions of agricultural growth is essential for understanding the pathways through which agriculture contributes to broader economic development.

Against this backdrop, the present study analyses the spatial and temporal dimensions of Gross State Domestic Product (GSDP) and Agricultural Gross Domestic Product (Ag. GDP) growth in Telangana from 1993–94 to 2019–20. The study evaluates growth performance across different periods, identifies the contribution of various time intervals to incremental increases in GDP and agricultural GDP, and examines district-level contributions to the state's economic expansion. Such an analysis provides valuable insights into the role of agriculture in Telangana's development trajectory and offers evidence for designing region-specific policies aimed at achieving balanced and sustainable growth.

Methodology

The study utilizes the long-term time series data spanning 27 years from 1993-94 to 2019-20, extracted from the Socio-Economic Surveys of Andhra Pradesh and the Socio-Economic Outlooks of Telangana, as well as various issues of District Domestic Product reports from the Directorate of Economics and Statistics, Hyderabad. A splicing technique was applied to standardize and harmonize all constant price parameters into a single uniform base year of 1993-94. Growth dynamics for overall and agricultural GDP were evaluated using Compound Annual Growth Rates (CAGR) via a semi-logarithmic model. The sources of incremental increase were analysed to determine the temporal and spatial (district-level) drivers of Telangana's economic expansion.

Conversion of different base year constant prices into single base constant prices

To construct long time series of economic aggregates, it is generally necessary to piece together several heterogeneous shorter series. Heterogeneity arises due to changes in benchmark years. State and district level data on Gross Domestic Product (GDP), agricultural GDP and different sub sectors share to agricultural GDP at constant prices is available in different base years (1993-94, 1999-00, 2004-05 and 2011-12) which makes the analysis and comparison of

results at different time periods difficult. Therefore, the data pertaining to constant prices of different base years related to the GDP and agricultural GDP by district and sector wise has been converted into single base year (1993-94) for easier analysis and comparison of the results by using splicing technique (Moreno, 2014) [4].

The splicing techniques was used for conversion of different base year data into single base year. The procedure of splicing technique is as follows.

If we have two time series data with overlapping observation, one with base year X and other with Y, then to change the base year of X to Y

$$\text{Value } Y_{t+1} = \text{Value } X_{t+1} * \left[\frac{\text{Value of } Y_t}{\text{Value of } X_t} \right]$$

Where Y_{t+1} = Estimated value of base year Y for the time period t+1

X_{t+1} = Value of the base year X of the time period t+1

Y_t = Value of the time series with base year Y of time period t

X_t = Value of the time series with base year X of time period t

In other words, value of new series equals the old series multiplied by the ratio of series.

In case of missing overlapping observation, the overlapping observation has been created using the current prices data for corresponding year. And the procedure for creating an overlapping observation is as follows

$$\text{Value } Y_{t+1} = \text{Value of } Y_t * \left[\frac{\text{Value of } X_{t+1}}{\text{Value of } X_t} \right]$$

Where Y_{t+1} is an overlapping observation

Y_t is the value of the constant price series of t^{th} year

X_{t+1} is the value of current price series of $t+1^{\text{th}}$ year

X_t is the value of current price series of t^{th} year

Computation of Compound Annual Growth Rates

The Compound Annual Growth Rate (CAGR) is one of the most accurate ways to calculate that can rise or fall in value over time. Traditionally the semi-logarithmic model was applied for estimation of the annual compound growth rates. The following formula was used to calculate annual growth rates.

$$Y_t = AB^t e$$

Y_t is the variable for which growth is calculated at t^{th} period
t is time variable

A is constant

B is $(1+r)$, 'r' is compound growth rate and 'e' is error term

Transforming this to the logarithmic form

$$\ln Y_t = \ln A + (\ln B) t + \varepsilon$$

then CAGR calculated as: CAGR (per cent) = $[\text{antilog}(\ln B) - 1] \times 100$

Estimation of sources of incremental increases

Incremental increase is used to describe something that increases in value. Incremental increases in the selected variables or indicators (GDP, Ag. GDP) between two points of period was estimated and sources of these incremental

increases were also worked out by sub-periods, sub-sectors and by districts.

The following formula has been used to estimate the share of sub-periods (temporal), sub-sectors (sectoral) and districts (spatial) in the total incremental increase in the selected indicator between base year (1993-94) and terminal year (2019-20).

1. $PI_i = Y_{iT} - Y_{iB}$
2. $\sum PI_i = \sum P_1 Y_{iT} - P_1 Y_{iB}, P_2 Y_{iT} - P_2 Y_{iB}, \dots, P_n Y_{iT} - P_n Y_{iB}$
3. Therefore, share of $P_n I_i = \frac{P_n Y_{iT} - P_n Y_{iB}}{\sum P_i Y_i}$

Where,

PI_i = Incremental increase in i^{th} indicator/variable between base year and terminal year during the period P (1993-94 to 2019-20)

Y_{iT} = Quantity of i^{th} indicator/variable during the terminal year (2019-20)

Y_{iB} = Quantity of i^{th} indicator/variable during base year (1993-94)

$P_1 Y_{iT}$ = Quantity of i^{th} variable/indicator during terminal year of the period 1

$P_1 Y_{iB}$ = Quantity of i^{th} variable/indicator during base year of the period 1

$P_2 Y_{iT}$ = Quantity of i^{th} variable/indicator during terminal year of the period 2

$P_2 Y_{iB}$ = Quantity of i^{th} variable/indicator during base year of the period 2

$P_n Y_{iT}$ = Quantity of i^{th} variable/indicator during terminal year of the period n

$P_n Y_{iB}$ = Quantity of i^{th} variable/indicator during base year of the period n

The sources of GDP and Agricultural GDP by different sub-periods have been carried out at both current and constant prices.

Results and Discussion

The compound annual growth rates of overall and three periods for GDP and agricultural GDP at 1993-94 constant prices were estimated using log-linear model for India and Telangana for three different time periods i.e., 1993-94 to 2003-04, 2003-04 to 2013-14 and 2013-14 to 2019-20 and the same were presented in Table 1.

Table 1: Compound annual growth rate of overall GDP vis-à-vis agricultural GDP of India and Telangana state, 1993-94 to 2019-20 (at 1993-94 - constant prices) (% per annum)

Period	India		Telangana	
	GDP	Ag. GDP	GDP	Ag. GDP
1993-94 to 2003-04	6.53**	2.22***	6.41***	4.95***
2003-04 to 2013-14	9.31***	4.79***	11.65***	7.76***
2013-14 to 2019-20	7.24***	3.77***	8.57***	5.79**
1993-94 to 2019-20	8.15***	3.75***	9.49***	6.01***

Note: ***, ** and * indicates level of significance at 1%, 5% and 10% respectively

It is clear from the Table 1. that the decade of 2003-04 to 2013-14 was found to be the best period with highest average compound annual growth rate of 9.31 and 11.65 per cent per year in India and Telangana in case of overall GDP.

During the recent 7 years i.e., from 2013-14 to 2019-20 there was also a significant growth in overall GDP at about 7.24 per cent per year. It is not out of the context to mention that the Central Statistical Office (CSO) has modified GDP estimation procedure during 2015-16 and the new series of GDP estimates were published. It has been reported that under the modified GDP estimation method, informal sector output estimation witnessed significant changes which was not included in previous GDP estimation until 2014-15 (Nagaraj and Srinivasan, 2016) [5]. As a result of it, new series of GDP estimates from 2015-16 are overestimated by 3.5-5.5 per cent which were heavily criticised by several economist like Nagaraju (2016) [5] and Subrahmanyam (2019) [12]. Therefore, the compound growth rate of GDP shown in the Table 1. for the period 2013-14 to 2019-20 are based on the official GDP estimates using modified estimation method which were not comparable with GDP growth rate of previous two decades (1993-94 to 2013-14). The average compound growth rate of agricultural GDP was highest during the period 2003-04 to 2013-14 in both India and Telangana (4.8 and 7.8% per year). The special focus given to agricultural sector through both central and state government policies during 2004 in terms of increased investment in agricultural infrastructure through Rastriya Krishi Vikas Yojana (RKVY), increased flow of institutional credit to the farmers, increased investment in irrigation, higher rate of Minimum Support Price (MSP) in major crops than previous periods, good monsoons, etc. are the major reason for agricultural growth in this period. It may be worth to note that the compound annual growth rate of agricultural sector during the early green revolution period i.e., 1950-1966 (2.1% per year), 1966-1981 (2.5% per year) and late green revolution period 1981-1991 to (2.8% per year) were lower (Tripathi and Prasad, 2009) [10] than the growth recorded during 2003-04 to 2013-14. Similarly, the agricultural growth registered 2003-04 to 2013-14 was also higher than what it is reported during 1991-92 to 2006-07 (2.6% per year).

Agricultural GDP at constant prices has grown at least 3.7 and 5.8 per cent per year respectively in India and Telangana during 2013-14 to 2019-20, which were also higher than the agricultural growth experienced during 1950s, 1960s, 1970s, 1980s and 1990s as reported by Tripathi and Prasad (2009) [10].

Temporal sources of incremental increase in Gross Domestic Product – India and Telangana

This section deals with the analysis of agricultural growth from temporal, spatial and sectoral point of view in order to find out and examine sources and pathways of agricultural growth in India and Telangana state considering the GDP and GSDP as primary indicator of growth.

The past GDP and GSDP values at constant and current prices were collected for about 27 years from 1993-94 to 2019-20. Pre Telangana formation period is divided into three periods and post Telangana formation into one period as the state is a newly formed state. The share of different time periods in incremental increase of overall GDP/GSDP and agricultural GDP both at current and constant prices for India and Telangana where in the constant prices were corrected the base year 1993-94 for uniformity and the results were reported in Table 2 to 4.

Table 2: Contribution of different time periods in incremental increase of GDP/GSDP (at constant prices -1993-94) in India vis-à-vis Telangana state, from 1993-94 to 2019-20

Period	Contribution of each period to the total incremental increase in GDP/GSDP (Rs. Lakh crores)	
	India	Telangana
1993-94 to 2000-01	4.82 (9.37)	0.12 (6.16)
2000-01 to 2007-08	10.38 (20.18)	0.35 (17.37)
2007-08 to 2013-14	18.28 (35.54)	0.78 (38.52)
2013-14 to 2019-20	17.96 (34.90)	0.76 (37.94)
1993-94 to 2019-20	51.44 (100)	2.01 (100)

Note: Figures in parenthesis indicates the per cent share of each period to the total incremental increase in GDP/GSDP

Source: Socio Economic Survey from 1993-94 to 2012-13, Planning Department, Government of Andhra Pradesh, Hyderabad, and Socio-Economic outlook from 2013-2014 to 2019-20, Planning Department, Government of Telangana, Hyderabad.

The share of different time periods in incremental increase of GDP/GSDP of India and Telangana at 1993-94 constant prices were analyzed considering four different time periods i.e., 1993-94 to 2000-01 (Period I), 2000-01 to 2007-08 (Period II), 2007-08 to 2013-14 (Period III) and 2013-14 to 2019-20 (Period IV) having a flexible span of 8 years, 8 years, 7 years, and 7 years respectively. The later 7 and 7 years as mentioned above were considered to have a uniform span of pre post Telangana formation. The incremental increase in GDP in India at constant prices between 1993-94 to 2019-20 (over all period) was 51.44 lakh crores. Out of this incremental increase, the maximum share (35.54%) was contributed by the period 2007-08 to 2013-14 followed by the period 2013-14 to 2019-20 (Table 2). The incremental increase in GSDP in Telangana at constant prices was about 2.01 lakh crores between 2019-20 to 1993-94 in the entire time period considered and the same trend has been observed in Telangana as it was observed in case of India in other periods such as minimum share has been contributed by the time period 1993-94 to 2000-01 both in India and Telangana. The period 2007-08 to 2013-14 had experienced high growth rate due to policy of rapid and inclusive growth being implemented during this period i, e; eleventh five-year plan.

Table 3: Contribution of different time periods in incremental increase of GDP/GSDP (current prices) in India vis-à-vis Telangana state, 1993-94 to 2019-20

Period	Contribution of each period to the total increment increase in GDP/GSDP (Rs. Lakh crores)	
	India	Telangana
1993-94 to 2000-01	11.44 (5.72)	0.34 (3.61)
2000-01 to 2007-08	26.56 (13.28)	0.96 (10.31)
2007-08 to 2013-14	65.98 (33.00)	3.08 (32.91)
2013-14 to 2019-20	95.94 (47.99)	4.97 (53.16)
1993-94 to 2019-20	199.92 (100)	9.35 (100)

Note: Figures in parenthesis indicates the per cent share of each period to the total incremental increase in GDP/GSDP

Source: Socio Economic Survey from 1993-94 to 2012-13, Planning Department, Government of Andhra Pradesh, Hyderabad and Socio-Economic outlook from 2013-2014 to 2019-20, Planning Department, Government of Telangana, Hyderabad.

Similarly, at current prices, the share of the time period 2013-14 to 2019-20 in incremental increase of Indian GDP was observed to be maximum (47.99%) followed by the time period 2007-08 to 2014-15 which was about 33 per cent. The same trend has been observed for the Telangana state. The share of the time period 2013-14 to 2019-20 and 2007-08 to 2013-14 was 53.15 and 32.91 per cent respectively in Telangana state as presented in Table 3.

Table 4: Contribution of different time periods in incremental increase of agricultural GDP (at constant prices 1993-94) in India vis-à-vis Telangana state, 1993-94 to 2019-20

Period	Contribution of each period to the total increment increase in agricultural GDP (Rs. Lakh crores)	
	India	Telangana
1993-94 to 2000-01	0.46 (11.92)	0.03 (13.76)
2000-01 to 2007-08	0.96 (24.90)	0.04 (22.16)
2007-08 to 2013-14	1.28 (33.47)	0.06 (29.02)
2013-14 to 2019-20	1.15 (29.70)	0.07 (35.05)
1993-94 to 2019-20	3.85 (100)	0.19(100)

Note: Figures in parenthesis indicates the per cent share of each period to the total incremental increase in agricultural GDP

Source: Socio Economic Survey from 1993-94 to 2012-13, Planning Department, Government of Andhra Pradesh, Hyderabad and Socio-Economic outlook from 2013-2014 to 2019-20, Planning Department, Government of Telangana, Hyderabad.

The share of various time periods in incremental increase of agricultural GDP in India and Telangana was analyzed for four different time periods as mentioned earlier i.e., 1993-94 to 2000-01(Period I), 2000-01 to 2007-08 (Period II), 2007-08 to 2013-14 (Period III) and 2013-14 to 2019-20 (Period IV). The incremental increase in agricultural GDP in India at constant prices between 1993-94 to 2019-20 was 3.85 lakh crores. Out of this incremental increase, the maximum share was contributed during of 2007-08 to 2013-14 followed by 2013-14 to 2019-20 (Table 4). In Telangana, the share of the time period 2013-14 to 2019-20 was observed as highest among the all-time periods (35.05%) followed by the time period 2007-08 to 2013-14 (Table 4). The reason for the highest share of the time period 2013-14 to 2019-20 may be due to the agricultural investment support scheme offered by the Telangana government to the farmers in the name of Rythu Bandhu which facilitated timely adequate quantities of inputs and massive investment in irrigation as well as experience of continuous good monsoons for 8 years.

Rythu Bandhu scheme was implemented from the year 2018-19 kharif season to take care of initial investment needs of both agriculture and horticulture farmers. Under this scheme, farmers initially used to get an investment support Rs. 4000 per acre which was later increased to Rs. 5000 per acre towards the purchase of agricultural inputs.

Table 5: Contribution of different time periods in incremental increase of agricultural GDP (current prices) in India vis-à-vis Telangana state, 1993-94 to 2019-20

Period	Contribution of each period to the total increment increase in agricultural GDP (Rs. Lakh crores)	
	India	Telangana
1993-94 to 2000-01	2.07 (6.58)	0.08 (5.51)
2000-01 to 2007-08	3.86 (12.27)	0.15 (10.73)
2007-08 to 2013-14	10.90 (34.58)	0.45 (31.37)
2013-14 to 2019-20	14.67 (46.67)	0.76 (52.38)
1993-94 to 2019-20	31.52 (100)	1.44 (100)

Note: Figures in parenthesis indicates the per cent share of each period to the total incremental increase in agricultural GDP

Source: Socio Economic Survey from 1993-94 to 2012-13, Planning Department, Government of Andhra Pradesh, Hyderabad and Socio-Economic outlook from 2013-2014 to 2019-20, Planning Department, Government of Telangana, Hyderabad.

Similarly, incremental increase in agricultural GDP at current prices in India was 31.52 lakh crores between 1993-94 and 2019-20. Out of which, the maximum share (46.56%) was contributed by the time period 2013-14 to 2019-20 followed by the time period 2007-08 to 2013-14. The incremental increase in agricultural GDP in Telangana between the same period was 1.44 lakh crores. The same

trend has been observed in Telangana as seen in the Indian context. The share of the time period 1993-94 to 2000-01 was found to be minimum both in India and Telangana.

Spatial sources of incremental increase across the time periods

Growth of any economic entity, small or big, the spatial component has its role as the agro-climatic conditions, infrastructure, irrigation and other socio-economic parameters vary across the locations. Therefore, an attempt was made examine all the districts of Telangana in terms of its GSDP, GDDP and agricultural GDP.

For analysis of spatial variations, the considered time periods have been studied by taking two approaches. First approach is that each district has been analyzed over the whole period of 1993-94 to 2019-20 for its performance in terms of change in its GDDP. Further the periods of 10 years each considered along with the overall time period. The second approach followed was within the time periods specified namely 1993-94 to 2003-04 (Period I), 2003-04 to 2013-14 (Period II) and 2013-14 to 2019-20 (Period III) and overall periods, the contribution of all districts towards incremental increase in GSDP in Telangana and results were reported in Table 6 to 9.

Table 6: Share of various districts in incremental increase of GSDP during different time periods in Telangana state at 1993-94 constant prices

Districts	1993-94 to 2019-20 (Rs. Crore)	Contribution of different periods		
		1993-94 to 2003-04	2003-04 to 2013-14	2013-14 to 2019-20
Adilabad	10008 (100)	1062 (10.61)	2678 (26.76)	6268 (62.62)
Nizamabad	11069 (100)	1272 (11.49)	4152 (37.51)	5645 (50.99)
Karimnagar	11892 (100)	1948 (16.38)	5402 (45.42)	4542 (38.19)
Medak	14093 (100)	2025 (14.37)	6739 (47.82)	5326 (37.79)
Hyderabad	38124 (100)	4085 (10.65)	26336 (68.66)	7932 (20.68)
Ranga Reddy	62143 (100)	3275 (5.27)	24708 (39.76)	34154 (54.96)
Mahbubnagar	15017 (100)	1837 (12.23)	6737 (44.86)	6442 (42.90)
Nalgonda	14209 (100)	1345 (9.47)	6556 (46.14)	6306 (44.38)
Warangal	14629 (100)	1732 (11.84)	4387 (29.99)	8508 (58.16)
Khammam	10077 (100)	1943 (19.28)	4066 (40.34)	4067 (40.36)
Telangana	201261 (100)	20670 (10.27)	93445 (46.43)	87146 (43.30)

Note: Figures in parenthesis indicates the per cent share of each period to the total incremental increase in GDDP

Source: District Domestic Product of Andhra Pradesh and Telangana (various issues), Directorate of Economics and Statistics, Hyderabad.

Share of various districts in incremental increase of GDDP during various periods at 1993-94 constant prices were estimated for Telangana for three different periods i.e., 1993-94 to 2003-04, 2003-04 to 2013-14 and 2013-14 to 2019-20 and the same is presented in the Table 6.

The incremental increase in state GDP at constant prices during the period 1993-94 to 2019-20 was 2,01,261 crores (Table 6). Out of this incremental increase, nearly 50 per cent was contributed by 2 districts alone (Ranga Reddy and Hyderabad). The other major contributing districts to the incremental increase in state GDP are in the order of Mahbubnagar, Warangal, Nalgonda and Medak (Fig. 1)

From Table 6 it is noted that the recent period i.e., 2013-14 to 2019-20 was the major source of incremental increase in district level GDP between 1993-94 to 2019-20 in the districts of Adilabad, Nizamabad, Ranga Reddy and Warangal. In other districts, 2003-04 to 2013-14 was the major contributing period to incremental increase in district

level GDP recorded between 1993-94 2019-20.

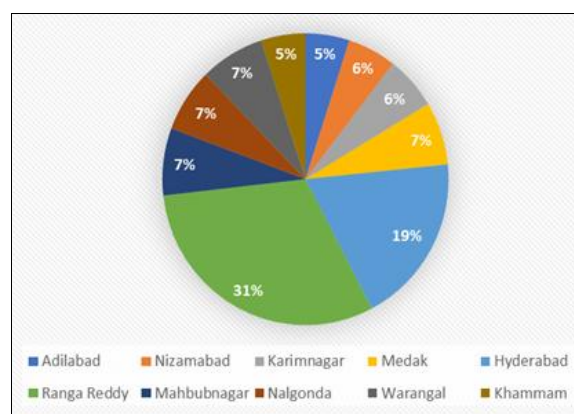
**Fig 1:** Share of various districts in incremental increase of GSDP in Telangana at 1993-94 constant prices

Table 7: Share of various districts in incremental increase of agricultural GDP during different time periods in Telangana state at 1993-94 constant prices

Districts	1993-94 to 2019-20 (Rs. Crores)	Contribution of different periods		
		1993-94 to 2003-04	2003-04 to 2013-14	2013-14 to 2019-20
Adilabad	1120 (100)	296 (26.42)	336 (30.00)	488 (43.57)
Nizamabad	1144 (100)	19 (1.66)	686 (59.96)	439 (38.37)
Karimnagar	1755 (100)	467 (26.60)	979 (55.78)	439 (17.60)
Medak	2265 (100)	511 (22.56)	814 (35.93)	940 (41.50)
Ranga Reddy	1648 (100)	217 (13.16)	672 (40.77)	759 (46.05)
Mahbubnagar	3385 (100)	574 (16.95)	1754 (51.81)	1057 (31.22)
Nalgonda	3950 (100)	624 (15.79)	1936 (49.01)	1390 (35.18)
Warangal	2080 (100)	460 (22.11)	733 (35.24)	887 (42.64)
Khammam	1880 (100)	276 (14.68)	1061 (56.43)	543 (28.88)
Telangana	19227 (100)	3465 (18.02)	8633 (44.90)	7126 (37.06)

Note: Figures in parenthesis indicates the per cent share of each period to the total incremental increase in agricultural GDP

Source: District Domestic Product of Andhra Pradesh and Telangana (various issues), Directorate of Economics and Statistics, Hyderabad.

Similarly, share of various districts in incremental increase of agricultural GDP at constant prices by time periods has been estimated and the same were presented in Table 7. The incremental increase in agricultural GDP between 1993-94 to 2019-20 was 19,227 crores. The major districts contributing to this incremental increase are Nalgonda (20.54%), Mahbubnagar (17.60%), Medak (11.78%) and Warangal (10.81%) as presented in Fig. 2. The expansion of area under high value crops like cotton and horticulture, increased irrigation, etc. are the important reasons for the higher share of Nalgonda in incremental increase of state agricultural GDP over the last 30 years. The time period, 2003-04 to 2013-14 was found to be significant source of incremental increase in agricultural GDP over the past 30 years in the districts of Karimnagar, Nizamabad, Nalgonda, Mahbubnagar and Khammam. For other districts, the recent time period i.e., 2013-14 to 2019-20 has contributed significantly to incremental increase in agricultural GDP over the past 30 years (Table 7).

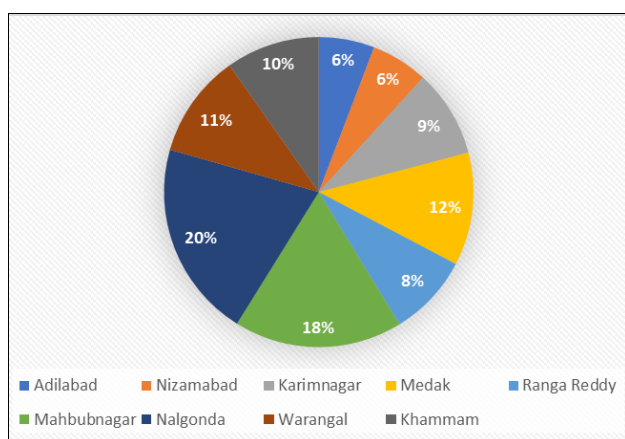


Fig 2: Share of various districts in incremental increase of agricultural GDP in Telangana at 1993-94 constant prices

Conclusion

The study examined the spatial and temporal dimensions of overall GDP and agricultural GDP growth in Telangana over the period 1993–94 to 2019–20 and compared the state's performance with the national economy. The results revealed that Telangana recorded higher growth rates in both overall GDP and agricultural GDP. Agricultural GDP in Telangana grew at an average annual rate of 6.01 per cent

compared to 3.75 per cent for India, indicating the significant contribution of agriculture to the state's economic transformation.

The analysis of temporal sources of growth showed that the periods 2007–08 to 2013–14 and 2013–14 to 2019–20 were the major contributors to incremental increases in both GDP and agricultural GDP. While the period 2007–08 to 2013–14 accounted for the largest share of growth at constant prices, the post-state formation period emerged as a significant driver of agricultural expansion, particularly in Telangana. Enhanced public investment in irrigation, improved access to institutional support, implementation of agricultural development programmes, and favourable monsoon conditions contributed substantially to this growth. The introduction of schemes such as Rythu Bandhu and increased emphasis on agricultural infrastructure further strengthened the sector during the post-2014 period.

The spatial analysis highlighted considerable inter-district variations in economic performance. Hyderabad and Ranga Reddy districts accounted for nearly half of the incremental increase in state GDP, reflecting their strong industrial and service-sector growth. Districts such as Nalgonda, Mahbubnagar, Medak, and Warangal emerged as major contributors to agricultural GDP growth, demonstrating the importance of agriculture in driving regional economic development. The findings suggest that differences in irrigation development, cropping patterns, infrastructure availability, and policy implementation significantly influenced district-level growth outcomes.

The study confirms that agriculture continues to play a critical role in Telangana's economic growth despite the increasing importance of non-agricultural sectors. Sustaining agricultural growth through continued investment in irrigation, climate-resilient technologies, market infrastructure, diversification towards high-value crops, and region-specific development strategies will be essential for achieving balanced economic growth and reducing regional disparities across districts.

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