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REGIONAL DIVERGENCE IN PER CAPITA INCOME IN DISTRICTS OF RAJASTHAN

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ABSTRACT

This paper deals with the level of disparity at district level in Rajasthan. Co-variances are calculated from Per Capita Income of different districts. This study calculates the level of growth from the growth rate and whether the poor districts are able to grow faster than the rich districts or the gap of disparity had increased or not in the last few years? It also analyses the position of convergence and divergence in different districts of Rajasthan. The analysis has been done for the period of 1991-2007. The study covers each and every district of Rajasthan. So it covers a total number of 32 districts. The districts like Hanumangarh, Ganganagar, Karauli, Kota, Baran and Chhitorgarh experience the highest growth rate among other districts within the state. The results reveal that the beta coefficients are positive. Thus there is divergence instead of convergence in the trend in PCNDDP. Though the planners in the state try to implement policies and programmes to achieve a balanced growth of economy as a whole, there is still a scope to put efforts in this regard. The private sector can also play an important role to achieve the balanced growth in the state so that the share of the income generated in the state gets distributed across the district equitably.

KEYWORDS

Regional Divergence, Growth Rates, Co-Variations, Per Capita Income, Districts of Rajasthan.

INTRODUCTION

Indian economy is one of the developing economies among the Asian nation. It experiences average annual GDP growth rate of 5.6% in last two decades. In last few years its Average annual growth rate remains 7.6%. In the world map the nation is counted as 15th largest importer and 18th largest exporter. It had world second largest labour force. The services sector contributes the maximum of 54% in GDP whereas agriculture gave 28% and Industrial sector had 18% sharing in GDP. Our telecommunication industry is the world fastest growing industry whereas Automobiles rank second largest. It ranks 51st in global Competitiveness and 16th in financial market in the world. But above this all the nation is facing so many social-economic problems like Unemployment, poverty, Illiteracy, Corruption and the most important regional disparity or regional inequality.

Regional inequality is a major socio economic problem through-out the world. Around the world research are going on to reduce the disparity. So many plans and programs were implemented to reduce the gap of disparity. In India lots of efforts are going on too to reduce the level of disparity. Why this problem is that much serious? The reason is because of this disparity there will be inequality of income distribution. Result the real benefits of the nation development will not reach up to the individual. Any effort is successful only when it took place in right direction. Means the flow is from the micro to macro level instead of macro to micro level. So instead of decreasing the disparity at state level we should tackle it at more micro level like district level.

This paper deals with the level of disparity at district level in Rajasthan. The main focus is over to the gap of per capita income within different district of Rajasthan. This study will calculate the level of growth and whether the poor districts are able to grow faster than the rich districts or are the gap of disparity had increased or not in the last few years? Or we say in the language of economics it is an attempt to find out the position of convergence in economic growth in different districts of Rajasthan. How the wind of Industrialization, globalization and privatization affect the level of disparity in different district of Rajasthan. So the calculation took place in the time period of 1991-2007 which comes under post reform period. Government of Rajasthan is doing huge effort to achieve the target of balanced growth but seems lack of desired results.

The review of literature reveals that the most of the studies have been undertaken at state level. The present study entitled, "Regional Divergence in PCI in different districts of Rajasthan." In this paper wherever growth rate is mentioned, it relates to per capita net district domestic product unless mentioned specifically related to any other variable.

This paper is divided into seven sections. First section is the introductory one. Second section deals with objectives of the study. Third section consists of review of literature. The sources of data and the methodology are explained in fourth section. Theoretical aspect of the study is explained in the fifth section. Sixth section comprises of empirical analysis of the study. Findings, the final section of the paper presents conclusions and policy implications of the study.

OBJECTIVE OF THE PAPER

This paper is an attempt to achieve the following objectives:

- To analyse the position of convergence and divergence in different districts of Rajasthan.
- To calculate the growth level of different districts after the reform period.
- Co-variances should be calculated from PCI of different districts.
- To reach at a justifiable conclusion for the present paper.

REVIEW OF LITERATURE

A number of studies have been undertaken so far in this area of research. Few of them were mentioned below with their results. This will add to make the present study a more meaningful and fruitful. Some of these studies are by Dholakia (1994) considered 20 states for analysis of the economic performance for the time period 1960-61 to 1989-90. He found that there is an existence of convergence of long-term economic growth rates for the states. He found the year 1980-81 as the breaking year in the real income trend where onwards the lagging states started picking up faster. Marjit and Mitra (1996) explain that there is divergence in per capita income across Indian states over the period 1960-94. The scatter between base period PCNSDP and the annual average growth rates were same in the states. They did not show any negative relationship and an upward trend was observed among the states. K. K. Subrahmanian and Syam Prasad (1997) His paper deals with relationship between inequality, growth and poverty. He used Gini-coefficient as the best statistical instrument to measure the inequality in various states. He concluded that 1% rise in the Gini-coefficient shows that Kerala faces a 5.02 % rise in its growth rate while 2% rise in Gini-coefficient results an only rise of 5% growth rate per annum in Kerala. To him only high rate of growth is not sufficient to reduce the poverty. It could only be reduced by transferring the income from rich to poor.

Ghosh (1998) also found evidence of divergence in Per Capita Income (PCI) across Indian states. Dasgupta (2000) found a phenomenon of divergence in PCI across 21 Indian states during 1960-96. He observed that the share of different sectors in State Domestic Product showed a tendency to converge towards the national average, indicating convergence of structural parameters. However, regression equations across states did not confirm any strong conclusion regarding absolute convergence. Ahluwalia (2000) found that not all the rich states got richer relative to the poor ones and not all the poor states got poorer. Means his study supported the law of convergence. The poor states are able to catch-up with the rich states with the help of adopting high-technology. Prabir De and Buddhadeb Ghosh (2005) His paper explains that the findings are statistically very significant to warrant major changes in future regional policies in order to

remove rising regional disparities in both infrastructure and income in different SAARC nation. This also has a strong bearing on the success of poverty removal policies as the poor are regionally concentrated in such a diverse and heterogeneous region of the world.

T.khomiakova(2008) used two research methods –exploratory spatial data and structure divergence analysis. The study supports that GSDP per capita continue to diverge in the post- reform period in 30 states in India. The local indicator that is spatial auto correlation suggests that there is low cluster of GSDP per capita in 30 states of India. Whereas the structural divergence analysis the sectorwise divergence. The services and Industry sector persists positive spatial auto-correlation of income but there is negative spatial auto-correlation between Agriculture sector and Income. Finally concluded that the divergence in Indian states in mainly caused by structural divergence. Diwaker (2009) explains the dimensions of intra-regional disparities, inequality and deprivation in poor households of the state. The disparity among the districts in terms of per capita income is majorly seen in central region of the states. The incidence of poverty is highest in eastern region. The real challenge is to address the intra-regional horizontal and vertical disparities at the district level which are hardly explicit in macro level data for the state as a whole.

SOURCES OF DATA AND METHODOLOGY

The data for the present study have been taken from the official website of Rajasthan government statistic department, i.e., www.directorate of economics and statistics. The data on Per Capita Net District Domestic Product on the website are available at the old series. The data of new series is not yet been released. The analysis has been done for the period of 1991-2007. The study covers each and every district of Rajasthan. So it covers a total number of 32 districts. Some districts formation took place within the research period. So their data's are not available completely like Hanumangarh and karauli their data's are available after 1993 and 1996 respectively. Graphs and tables have been used to make study more meaningful and fruitful. Average growth rate have been calculated of these 32 districts from PCNDDP in the time period of 1991-2007. Coefficient of variance (co-variance) has been calculated of each and every district of every year.

THEORETICAL ASPECT OF THE STUDY

There are several static and dynamic instrument to measure to calculate the level of regional inequality like Maximum to Minimum ratio, Coefficient of variation (C.V.), Relative mean deviation, Gini index and theil index. σ (sigma) convergence and β (beta) convergence. Here in our study we use Coefficient of variation for measuring the regional inequality. It is a measure of dispersion around the mean. The measure of standard deviation (S.D) gives an absolute measure of dispersion whereas the C.V. measures the relative dispersion. The C.V. is helpful in comparing the two series of data. The least value of C.V. shows less variability and more consistent while more value shows more variability and less consistent. The formula of C.V. is calculation is mentioned below-

$$\text{Coefficient of Variation (C.V.)} = \frac{\sigma}{X} \times 100$$

Convergence in economics (also sometimes known as the catch-up effect) is the hypothesis that poorer economies' per capita incomes will tend to grow at faster rates than richer economies. As a result, all economies should eventually converge in terms of per capita income. Developing countries have the potential to grow at a faster rate than developed countries because diminishing returns (in particular, to capital) aren't as strong as in capital rich countries. Furthermore, poorer countries can replicate production methods, technologies and institutions currently used in developed countries

This term was derived in 1956 from a neo classical economic growth model by Solow and Swan. According to this model the growth in output per worker has positive relationship with rate of saving and negative relationship with growth rate of labour force because of technological progress and depreciation of capital. The model concluded that the nation with low per capital stock and low per capita income will grow with a faster rate. This is the convergence of per capita income and growth rate due to diminishing marginal productivity assumption.

EMPIRICAL ANALYSIS OF THE STUDY

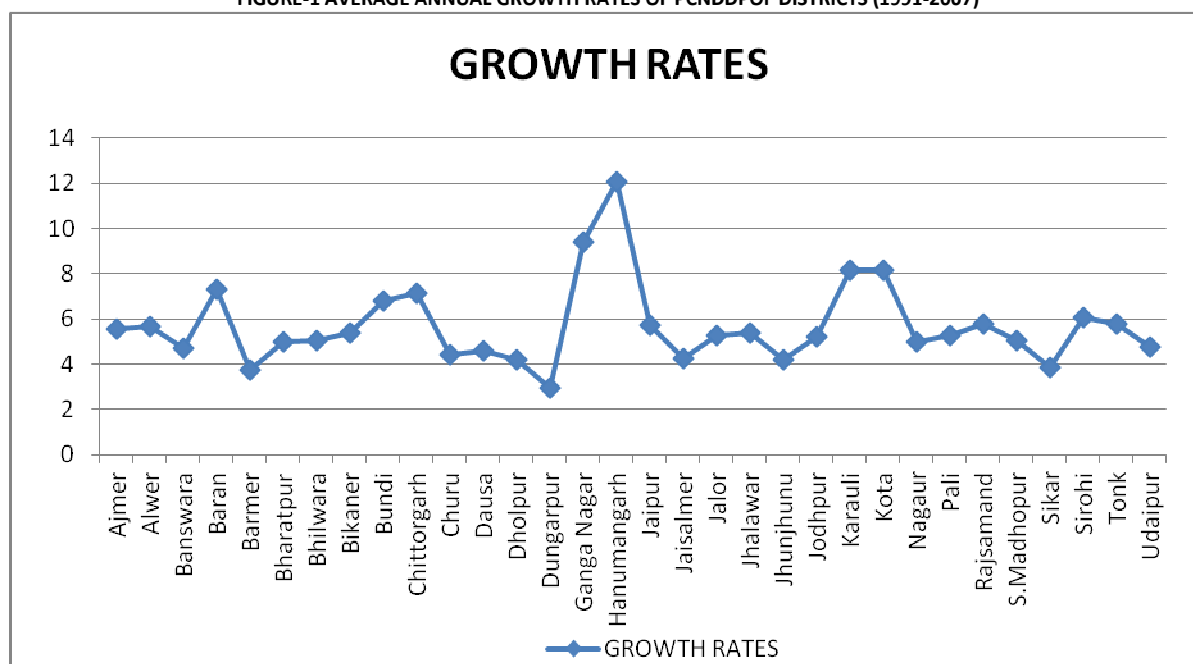
The first table shows us the growth rates of PCNDDP of different districts of Rajasthan from 1991-2007. The districts like Hanumangarh, Ganganagar, karauli, kota, Baran and Chhitorgarh experience the highest growth rate among other districts within the state.

TABLE-1
AVERAGE ANNUAL GROWTH RATES OF PCNDDP OF DISTRICTS (1991-2007)

DISTRICTS	GROWTH RATES
Ajmer	5.58
Alwer	5.68
Banswara	4.72
Baran	7.3
Barmer	3.75
Bharatpur	5.02
Bhilwara	5.06
Bikaner	5.4
Bundi	6.8
Chittorgarh	7.14
Churu	4.41
Dausa	4.59
Dholpur	4.19
Dungarpur	2.98
Ganga Nagar	9.38
Hanumangarh	12.07
Jaipur	5.73
Jaisalmer	4.28
Jalor	5.26
Jhalawar	5.38
Jhunjhunu	4.2
Jodhpur	5.22
Karauli	8.17
Kota	8.15
Nagaur	4.98
Pali	5.26
Rajsamand	5.76
S.Madhampur	5.03
Sikar	3.88
Sirohi	6.06
Tonk	5.79
Udaipur	4.77

SOURCE – COMPUTED (On the basis of data available from the Directorate of Economics and Statistics)

FIGURE-1 AVERAGE ANNUAL GROWTH RATES OF PCNDDPOF DISTRICTS (1991-2007)



SOURCE: - TABLE-1

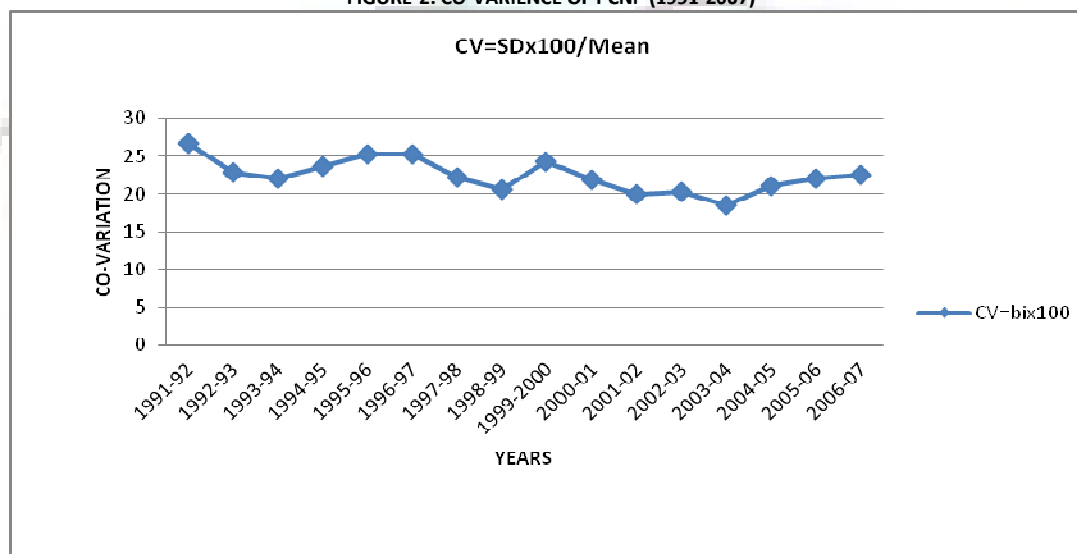
The graph plotted above clears that Hanumangarh is the district which shows highest growth rate while its formation took place in the year of 1993. The up and down of graph shows the variation of equality in the districts. Some districts are facing good growth rate while others are facing the lowest of growth rate of even 2.98. Planning programs are needed to cover this grate range of inequality. Then finally the graph will have a vertical slope for the growth rate of districts of Rajasthan.

TABLE-2 CO-VARIANCE OF PCNDDP (1991-2007)

years	CV=SDx100/mean
1991-92	26.74
1992-93	22.84
1993-94	22.07
1994-95	23.73
1995-96	25.31
1996-97	25.23
1997-98	22.31
1998-99	20.55
1999-2000	24.33
2000-01	21.85
2001-02	19.96
2002-03	20.31
2003-04	18.61
2004-05	21.09
2005-06	22.13
2006-07	22.56

SOURCE – COMPUTED (On the basis of data available from the Directorate of Economics and Statistics)

FIGURE-2: CO-VARIANCE OF PCNP (1991-2007)



SOURCE: - TABLE-2

Coefficient of variation was 26.7per cent in 1990-1991 and it decrease to 19.96 per cent in 2001-2002 which again increase to 22.56 in 2006-2007.

Statistical equations in the analysis are obtained as mentioned below-

α CONVERGENCE EQUATIONS:

$$1. \quad \text{C.V of PCNDDP} = 24.824 + 0.276 t^* \quad R^2 = .364$$

(1990-91 to 2006-07) (26.304) (2.829)

Note: Figures in brackets are t values

The results reveal that the beta coefficients are positive. Thus there is divergence instead of convergence in the trend in PCNDDP.

σ CONVERGENCE EQUATIONS:

$$2. \quad \text{Log of S.D. of PCNDDP} = 7.117 + .0779 t^* \quad R^2 = .862$$

(1990-91 to 2006-07) (88.16.) (9.339)

Note: Figures in brackets are t values

The results reveal significant divergence in levels of PCNDDP across the selected districts. R^2 is high and t – statistic for the positive slope coefficient are statistically significant.

β CONVERGENCE EQUATIONS:

$$3. \quad \text{GR PCNDDP} = 41.433 + 5.607^* \quad R^2 = .938$$

(1990-91 to 2006-07) (-18.497) (21.049)

Note: Figures in brackets are t values

The results reveal that Beta coefficient for the period 1990-81 to 2006-07 are found to be positive and hence statistically significant.

FINDINGS, CONCLUSIONS AND POLICY IMPLICATIONS OF THE STUDY

The districts like Hanumangarh, Ganganagar, Karauli, Kota, Baran and Chhitorgarh experience the highest growth rate among other districts within the state. Coefficient of variation was 26.7 per cent in 1990-1991 and it decrease to 19.96 per cent in 2001-2002 which again increase to 22.56 in 2006-2007. There is a tendency of showing an increase in the dispersion of per capita net district domestic product across the district. Alpha convergence equations also have positive coefficient. Sigma convergence tests reveal significant divergence in levels of PCNDDP across the selected district. Rate of divergence has increased since the time of initiation of economic reforms in the country. R^2 is found to be quite high and t – statistic for the positive slope coefficient are statistically significant. Beta coefficient for the economic reforms period is positive and statistically significant. The results of this study which have been obtained reveal that there is significant divergence in levels of PCNDDP across the selected districts. Though the planners in the state try to implement policies and programme to achieve a balanced growth of economy as a whole, there is still a scope to put efforts in this regard. The private sector can also play an important role to achieve the balanced growth in the state so that the share of the income generated in the state gets distributed across the district equitably.

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