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Economic Reforms and Regional Disparities in India

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Abstract

This paper makes an attempt to re-examine the issue of inter-state inequality of growth and standards of living across 14 major states within the convergence analysis of neoclassical growth paradigm after economic reforms from 1993-94 to 2004-05. Despite inconclusive evidence for β-divergence in per capita real income, the evidence in favour of β-divergence in secondary and tertiary sector in per capita terms shows the rising inter-state inequality of growth and standards of living across the Indian states during this period. This indicates that growth rates of the relatively better off states of these sectors have grown faster than that of the worse off counter parts. Thus, Policy makers and planners can think of creating the investment climates through private-public partnership in different lagging sectors of the states to achieve the balanced inter-state growth and to catch up the standards of living of the better off states.

Key words: Real Income, Economic Reform, β-Convergence, Primary, secondary and Tertiary Sectors

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Introduction

Initiation of India's economic reforms started in the mid-1980s and accelerated the pace of reforms following the balance of payment crisis in 1991. In recent years, a number of studies have attempted to examine the issues of economic reforms and their impacts on Indian economy (Dholakia, 2003; Shetty, 2003; Singh and Srinivasan, 2002; Ahluwalia, 2001; and many others). Despite these considerable attempts to understand the inter-regional differences in growth of income and standards of living of people in the process of economic development of India, regional inequity has continued to be a matter of serious concern for development economists, planners and policy makers. It is undeniable that the pace of reforms through various channels has its impact on output indicators of standards of living; the subtlety of this reform process seems to be difficult to grasp. Although reforms have been initiated at the Central Level at the beginning of the reform era started in 1991, differences in the pace of reforms across the States have led to different kinds of impacts on different states depending upon their infrastructure availabilities and abilities to gain from the reform processes. Furthermore, differences in the degree of penetration of these structural adjustment programmes in different sectors (i.e. primary, secondary and tertiary) across the states are yet to be realised and visualised, which ultimately contribute to the growth of income at the state and national levels. Thus, there is a need for thorough understanding of the reasons for differences in growth rates to evolve with effective policies and institutions to spread the benefits of growth process to different states.

The macroeconomic strategies, such as, import substitution and public sector led planned economic development have shifted to export-oriented and private led economic development driven by market forces (Dholakia, 2002). This has resulted in a significant change in the growth of real national income as well as a large scale structural transformation of Indian federation. Besides the external liberalisation, economic reforms (e.g., tax and regulation polices) have facilitated for mobility of goods and factors within and between the subnational jurisdictions in India's federal system. The national and subnational governments of the sub-continent are also changing with regard to the

financial sector reforms, assignment of regulatory powers, infrastructure reform and development, privatization, tax reforms, reform of center-state fiscal transfer mechanisms, local government reforms (Singh and Srinivan, 2002). As a result of this transition from plan to market based economic development in India, the sub-national governments realise their greater role to provide physical and social infrastructure and to create accommodating investment climate through public-private partnership to reap the benefits from the market based reforms.

There are a few studies in India that have focused on the issue of regional growth and convergence in per capita real income across the states within the neoclassical growth paradigm. These studies have tried to show the tendency of either convergence or divergence in per capita income by using different samples of states over different time periods and arrived at times conflicting conclusions. While some of these studies reveal that the growth pattern of per capita income had followed a divergent tendency in absolute terms [Marjit and Mitra, 1996; Rao et al. 1999; Dasgupta et al., 2000]; after controlling internal migration, center-state grants, and different indexes of physical, social and economic infrastructure, the evidence is found in favour of unconditional and conditional convergence in per capita real income across the Indian states [Cashin and Sahay, 1996; and Nagaraj et al., 1997; Aiyer, 2001].

With the changing scenario of Indian economy after the initiation of economic reforms, it is interested to see the impacts of these different dimensions of reforms in the patterns of change in regional inequality in terms of per capita income and sectoral levels. Thus, this paper makes a preliminary attempt to re-examine the absolute convergence to divergence in per capita real income and in primary, secondary and tertiary sectors in per capita terms and hence, standards of living across 14 major states in India within the framework of neoclassical growth theory from 1993-94 to 2004-05. A framework for absolute convergence is provided in section II. Section III deals with the database, variables and time frame. Estimation results and interpretations are given in section IV. A concluding remark is provided at the end.

Absolute Convergence

One of the basic predictions of the neoclassical growth theory (Solow-Swan, 1956) is that economies with lower capital-labour ratio tend to grow faster than the economies with higher capita-labour ratio. It predicts that if the economies are similar with respect to their tastes and preferences, and technology, then there is an inverse relationship between the initial level of per capita income and its growth rate due to implications of diminishing returns to reproducible capital. The lower the initial level of per capita income, the higher is the growth rate of per capita income.

Barro and Sala-i-Martin (1995) coin two notion of classical convergence to explain the differences in levels and growth rates of income across different economies. β-Convergence refers to whether the standards of living of people in poor economies are growing faster than rich ones while σ-convergence measures whether the cross-sectional dispersion of *natural logarithm* of the levels of per capita real income declines over time.

β-Convergence (absolute or unconditional convergence) can be estimated using the following standard growth regression model (1). This equation (1)[1] relates the growth rates of real per capita income between two periods to the initial level of real per capita income.

$$\frac{1}{T}\ln\left[y_{iT}/y_{i0}\right] = a - \frac{1}{T}\left[(1-e^{-\beta T})\right]\ln(y_{i0}) + u_{i0,T}$$

where $a = x + \frac{1}{T}(1-e^{-\beta T})\ln(y^*)$ is a constant, y stands for real per capita income, y^* is the steady state level of real per capita income, *i*

[1]Semi-log model is the better one to find out least square growth rate (trend growth rate) since it takes into account all the information over the period. But, if the base and terminal years are normal, then (average) growth rate obtained from these two end points does not vary much from least square growth rate. However, trend growth rate is used for cross-sectional analysis of growth and convergence in this paper. Sigma and conditional convergence are not attempted to examine here.

refers to State (province), T is the time interval, $u_{i0,\ T}$ is the random disturbance term with mean zero (0) and variance σ^2 and distributed independently of ln (y_{i0}). It reflects unexpected changes in production conditions or preferences. It is also assumed to be independent over time and across States. Considering the steady state growth rate, x, the convergence speed, β, as fixed, the equation (1) states that the growth rate of real per capita income depends negatively on the initial level of real per capita income [ln (y_{i0})]. The parameters a and β are common to all states. The estimates of β can be obtained directly from non-linear form of equation (1) or indirectly by retrieving the convergence coefficient from the linear regression coefficient of OLS estimation of equation (1). In general, if the OLS coefficient is less than zero, then it indicates absolute convergence i.e., poor states grow faster than the rich states.

Database, Variables and Time Frame

Disaggregated NSDP at factor cost[2] at 1993-94 constant prices and population data for 14 major states for the period 1993-94 to 2004-05 are collected from National Accounts Statistics (EPW Research Foundation, 2003) and updated from www.indiastat.com to analyse absolute convergence in per capita real income (PCI). Per capita primary, secondary and tertiary at the sectoral levels are computed to examine the absolute convergence and to look into the contributions to the growth of per capita real income during this period[3]. The total time period 1993-94 to 2004-05 is dividend into five sub-periods such as 1993-2004, 1993-2000, 2000-2004, 1996-2000, and 1996-2004 to find

[2] Disaggregated NSDP is the Net State Domestic Product at factor cost by Industry of origin.

[3] Primary sector includes agriculture, forestry and logging, fishing, mining and quarrying, secondary sector includes manufacturing and construction, electricity, gas and water supply; and tertiary sector consists of transport, storage and communications, railways, transports by other means and storage, communications, trade, hotel and restaurants, banking and insurance, real estates, ownership of dwellings and business services, public administration, other services etc.

the evidence of convergence or divergence phenomenon during these periods.

Estimations Results and Interpretations

The equation (1) is estimated by employing Ordinary Least Square (OLS) method. Trend growth rate of per capita real income is used as dependent variable and *natural log* of initial levels of per capita real income at the beginning of the period is taken as independent variable to find the issue of convergence. From the coefficient of initial levels of per capita real income, β-convergence is computed as given in Table 1.

Table 1: β-convergence in Per Capita Real Income from 1993-94 to 2004-05

Dependent Variable: Trend growth rate of per capita real income

Sample period	Coefficient of $ln(y_{i0})$	β -convergence	t-value	R-square
1993-2004	0.00981	-0.0093	1.1	0.091
1993-2000	0.00864	-0.0084	0.86	0.059
2000-2004	0.02033	-0.0195	1.43	0.145
1996-2000	-0.00398	0.0040	-0.24	0.005
1996-2004	0.00776	-0.0075	0.77	0.047

Note: Degree of freedom is 12.

Source: Estimated by using equation (1).

It can be seen from Table 1 that the coefficients of initial levels of per capita real income [$ln(y_{i0})$] are positives in all the periods except for the period 1996-2000. However, none of these coefficients are statistically and significantly different from zero. This indicates that there has been neither any evidence of absolute divergence nor convergence in per capita real income across 14 major states during these periods. Nevertheless, the positives coefficients show the tendency of divergence pattern in per capita real income after the initiation of reform process in India. The relatively high coefficient of initial level of per capita real income for the period 2000-2004 as compared to other sub-periods implies greater tendency towards the divergence trend across the states. The initial level of per capita real income alone

explains around 15 per cent variations in trend growth of per capita real income across 14 major states as indicated by R-square value (0.145) in the period 2000-2004.

Sectoral Analysis of Convergence

In order to find absolute convergence or divergence at the sectoral level, the same equation (1) is estimated with the OLS regression. These estimation results for per capita primary sector, per capita secondary sector and per capita tertiary sector are presented in Table 2, 3, and 4 respectively.

Table 2: β-convergence in Per Capita Primary Sector from 1993-94 to 2004-05

Dependent Variable: Trend growth rate of per capita primary sector

Sample period	Coefficient of $ln(y_{i0})$	β -convergence	t-value	R-square
1993-2004	0.00424	-0.0041	0.34	0.012
1993-2000	0.00159	-0.0016	0.09	0.0008
2000-2004	-0.06677	0.0777	-1.16	0.118
1996-2000	0.0002	-0.0002	0.01	0.0001
1996-2004	-0.03422	0.0400	-0.63	0.0391

Note: Degree of freedom is 12.
Source: Estimated by using equation (1).

Table 3: β-convergence in Per Capita Secondary Sector from 1993-94 to 2004-05

Dependent Variable: Trend growth rate of per capita secondary sector

Sample period	Coefficient of $ln(y_{i0})$	β -convergence	t-value	R-square
1993-2004	0.00357	-0.0035	0.296	0.008
1993-2000	0.01274	-0.0122	0.78	0.057
2000-2004	-0.00235	0.0024	-0.179	0.003
1996-2000	-0.01418	0.0146	-0.766	0.054
1996-2004	0.03231	-0.0287	1.727***	0.229

*Note: Degree of freedom is 12. *** Significant at 10% level.*
Source: Estimated by using equation (1).

Interestingly, while the coefficients of per capita primary and secondary sectors are negatives, it is positive for per capita tertiary sector during 2000-2004. However, the coefficients for per capita primary and secondary sectors are not significant whereas, it is significant for per capita tertiary sector at 10 per cent level. The magnitude of this coefficient (0.03) is also high for the sub-period 2000-2004 as compared to other periods. This implies that there has been evidence in favour of β-divergence for per capita tertiary sector but no significant evidence for β-convergence in primary and secondary sectors. The speed of absolute β-divergence is at around 2.87 per cent per annum to divergence from the steady state levels of per capita tertiary sector during 2000-2004. This means that the trend growth rates of per capita tertiary sector of relatively better off states have grown faster than that of worse off counterparts. Thus, the initial level of per capita tertiary sector explains around 34 per cent variations in trend growth rates across 14 major states. This per capita tertiary sector has resulted in more dispersion in per capita real income across the 14 major states after 2000 as indicated by relatively high magnitude of 0.02 due to the faster growth of tertiary sector in better off states. Thus, while the reform process has generated larger income in tertiary sectors across the states after the liberalisation, it has indeed created considerable disparities in growth and inequality in per capita real income across regions in Indian economy. Relatively better off states have reaped the benefits of growth process as compared to poorer states due to better infrastructure facilities and better fiscal management. Since the better off states can afford to spend more on public utilities services and other socio-economic infrastructure, they attract higher levels of private investment, which in turn, generates high levels of income. As a result of which, there has greater growth momentum in relatively better off states than that of worse off states.

Table 4: β-convergence in Per Capita Tertiary Sector from 1993-94 to 2004-05

Dependent Variable: Trend growth rate of per capita tertiary sector

Sample period	Coefficient of $ln(y_{i0})$	β -convergence	t-value	R-square
1993-2004	0.01509	-0.0140	0.952	0.083

1993-2000	0.01042	-0.0101	0.652	0.04
2000-2004	0.03042	-0.0287	2.269***	0.339
1996-2000	0.02065	-0.0198	1.06	0.101
1996-2004	0.02604	-0.0237	2.208***	0.327

*Note: Degree of freedom is 12.*** Significant at 10% level.*

Source: Estimated by using equation (1).

Another interesting point is that the coefficients of initial levels of per capita secondary and tertiary sectors are positive and statistically significant at 10 per cent level indicating the evidence in favour of absolute β-divergence for the period 1996-2004. However, the rate of β-divergence, 2.87 per cent per annum is found to be relatively higher for per capita secondary sector than that of for per capita tertiary sector (2.37 %). This clearly shows that the trend growth rates of these sectors of relatively better off states in per capita terms grown faster than that of the worse off counterparts during 1996-2004. 33 per cent and 23 per cent variations in trend growth rates of tertiary and secondary sectors, respectively are explained by theirs initial levels in per capita terms. It can also be seen that there has been tendency of β-convergence as evident from coefficient of initial levels of per capita primary sector. Therefore, the secondary and tertiary sectors have been the major contributing factors in rising disparities in growth and levels of per capita real income across 14 major states in India.

Furthermore, the gap in growth performance of states in India has increased after the initiation of market-oriented reforms at the beginning of mid 1990s. At this stage, however, it is difficult to attribute the differential growth performance of states due to initiation of reforms only. The structures of primary, secondary and tertiary sectors may themselves be changing due to advancement of knowledge and externalities etc. other than the pure reforms process. The standards of living of people in states such as Gujarat, Maharashtra, Karnataka, Kerala, Tamil Nadu, and West Bengal have grown at more than 4 per cent per year in comparison to 14 states' average growth rate of at around 3 per cent per year. Therefore, the relatively rich states seemed to have better infrastructure facilities and other efficient fiscal management after the liberalisation have grown more rapidly than their relatively poor counterparts.

Conclusion

Convergence in income across 14 major states is empirically re-examined within the neoclassical growth paradigm from 1993-94 to 2004-05. Despite the absence of significant β-convergence or divergence in per capita real income, the evidence of significant β-divergence in secondary and territory sectors in per capita terms during 1996-2004 have shown the rising inter-state disparities after the initiation of market oriented reform process in Indian economy. This finding is corroborated with earlier findings [Rao et al. (1999), Dasgupta et al. (2000)]. This indicates the inter-state inequalities in levels and growth of per capita real income.

This paper has attempted to focus on only absolute convergence. Further study of sigma and conditional convergence may provide better explanations for differences in growth and disparities across the Indian states. Much more work needs to be done to understand the factor accumulation that plays key role to economic growth and explains the differences in growth rates across the states. However, region-specific effects due to differences in levels of technology, institutional and policies variables, and other physical endowments of resources may influence the differences in the growth and degree of convergence across the states. Taking into account all these factors, analyzing differential growth performances and hence differences in standards of living across India states may provide the satisfactory explanation.

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