

Regional Economic Growth and Convergence in India

PAUL CASHIN AND RATNA SAHAY

While per capita incomes in the states of India are quite diverse, they have been slowly converging in recent decades. Convergence has been aided by grants from the central government to the states; however, the contribution of internal migration to this process appears minimal.

A STRIKING feature of India's economic development since it became independent in 1947 is its low rate of per capita income growth, particularly in comparison with most other Asian countries. This fact is all the more noticeable given the favorable preconditions in the late 1940s of a well-diversified resource base, the world's fourth-largest pool of skilled (scientific and technical) manpower, a sizable group of entrepreneurs, long experience with public administration, and a relatively stable political system.

An important issue in development economics is whether economies that initially are laggards subsequently grow faster in per

capita terms, and catch up to those that started out ahead. While income differentials across countries are extremely large, income differentials across regions of a given country can also be significant.

In common with many of the industrial world's federal countries (Australia, Canada, Germany, Switzerland, and the United States), there have been concerns within India since independence regarding regional disparities in the context of national economic development. There are several key channels through which such regional disparities could be ameliorated in the process of national economic growth. Across economies that share common preferences (saving and consumption patterns) and technology, convergence of per capita incomes (in the context of the Solow-Swan neoclassical growth model) is driven by diminishing returns to capital—regions with lower initial ratios of capital to labor will have higher per capita income growth rates. Convergence can also occur through the redistribution of incomes from relatively rich regions to relatively poor regions of a federal country by its central government, and through flows of labor from poor to rich regions.

What drives convergence?

Assuming that all regions possess similar technology and similar preferences, and that

there are no institutional barriers to the flow of both capital and labor across state borders, the Solow-Swan neoclassical growth model would predict that states would have similar levels of real per capita income in the long run. Across regions of a given country that share such a common long-run level of real per capita income, convergence of per capita incomes is driven by diminishing returns to capital. That is, each addition to the capital stock generates large increases in output when the regional stock of capital is small. If the only difference between regional economies lies in the level of their initial stock of capital, the neoclassical growth model predicts that poor regions will grow faster than rich ones—regions with lower starting values of the capital-labor ratio will have higher per capita income growth rates.

Other channels through which convergence can occur are interregional capital mobility; the diffusion of technology from leader to follower economies; the redistribution of incomes from relatively rich regions to relatively poor regions of a federal country by its central government; and flows of labor from poor to rich regions. In our study, covering 1961–91 (see reference and box), we paid particular attention to the last two channels, which raise the following policy questions. First, have grants from the central government to state governments, an important component of fiscal fed-

Paul Cashin,
an Australian national, was an Economist in the Developing Country Studies Division of the IMF's Research Department, and is now at the University of Melbourne, Australia.

Ratna Sahay,
an Indian national, is an Economist in the Developing Country Studies Division of the IMF's Research Department.

Comparative economic indicators

	Real per capita income (1990 rupees)		Annualized per capita real income growth rate 1961-91 (percent)	Share of agriculture in state income (percent)		Share of manufacturing in state income (percent)	
	1961	1991		1961	1981	1961	1981
Andhra Pradesh (AP)	2,567	4,728	2.04	58.18	45.59	7.79	11.22
Assam (A)	2,941	4,014	1.04	55.27	54.01	17.14	6.94
Bihar (B)	2,007	2,655	0.93	53.58	54.14	9.67	6.40
Delhi (D)	6,236	10,177	1.63	7.01	4.55	23.30	23.31
Gujarat (G)	3,379	5,687	1.74	41.59	38.48	20.82	21.92
Haryana (H)	3,053	7,502	3.00	62.71	54.23	11.24	14.14
Himachal Pradesh (HP)	2,465	4,790	2.21	60.59	50.07	5.55	4.38
Jammu & Kashmir (JK)	2,511	3,872	1.44	67.55	50.67	5.78	5.01
Karnataka (KA)	2,763	4,696	1.77	60.41	42.78	8.96	18.18
Kerala (KE)	2,418	4,207	1.85	55.63	39.53	12.45	14.05
Madhya Pradesh (MP)	2,353	4,149	1.89	62.11	49.35	6.92	11.96
Maharashtra (MH)	3,818	7,316	2.17	41.58	27.79	21.59	27.41
Manipur (MN)	1,438	3,893	3.32	55.69	48.85	8.34	4.71
Orissa (O)	2,026	3,077	1.39	61.31	54.94	7.28	7.41
Punjab (P)	3,417	8,373	2.99	54.00	48.89	10.12	11.97
Rajasthan (R)	2,651	4,113	1.46	56.21	50.34	10.16	11.08
Tamil Nadu (TN)	3,118	5,047	1.61	51.88	25.43	15.03	27.42
Tripura (T)	2,325	3,420	1.29	62.72	57.15	5.71	4.48
Uttar Pradesh (UP)	2,353	3,516	1.34	60.01	51.68	7.83	10.66
West Bengal (WB)	3,641	4,753	0.89	40.51	31.88	20.26	24.68
All India ¹	2,857	4,934	1.82	48.56 ²	41.23 ²	17.20 ²	22.98 ²

Sources: Various official publications of the government of India.

¹ Includes data from states/union territories other than our sample of 20 states.

² The all-India sectoral composition relates to net domestic product at factor cost (current prices) for agriculture; forestry and fishing; and manufacturing, respectively. The 1981 all-India figures include mining in the share of agriculture, and construction in the share of manufacturing.

Income levels. Of the six initially poor states (Manipur, Bihar, Orissa, Tripura, Uttar Pradesh, and Madhya Pradesh) in 1961, five (Manipur, Bihar, Orissa, Tripura, and Uttar Pradesh) remained among the six poorest in 1991 (see table). The exception was Madhya Pradesh, which had moved up three places by 1991 and was replaced by Jammu and Kashmir. Delhi, the richest region in 1961 as well as in 1991, is clearly an outlier in that its per capita income in both years was more than double the average of the remaining states. Apart from Delhi, six other states (Maharashtra, West Bengal, Punjab, Gujarat, Tamil Nadu, and Haryana) had above-average per capita incomes in 1961 and all, with the exception of West Bengal, remained above the average in 1991. While, in general, the richer states in 1991 were more industrialized than others (for example, Tamil Nadu, Maharashtra, Delhi, and Gujarat), Punjab and Haryana, primarily agricultural states, had, respectively, the second- and third-highest per capita incomes in 1991.

Was there convergence?

There are two commonly used measures of regional income convergence. The first asks whether initially poor economies tend to grow faster than initially rich ones. The second asks whether the standard deviation (the dispersion of observations around an average measure) of per capita income is shrinking across economies over time. Both concepts are important, as it is interesting to know how fast the average poor economy becomes rich, independently of whether the variance of the per capita incomes of a group of economies is rising or falling.

Have initially poor states grown faster than initially rich states between 1961 and 1991? Our study did find convergence (Chart 1). As expected, both Manipur and Himachal Pradesh had below-average real per capita incomes in 1961, and relatively high rates of growth in the 30 years thereafter. While Delhi clearly had the highest real per capita income in 1961, its 1961-91 growth rate was close to that which would be predicted given its initial level of per capita net domestic product (NDP).

After taking into account exogenous shocks to the agricultural and manufacturing sectors, our study found that income convergence of the initially poor states to the initially rich states occurred at a rate of 1.5 percent per year. Such a value implies that it takes about 45 years to close one-half of the gap between any state's initial level of per capita income and the 20 states' common long-term level of per capita income. This estimated speed of convergence is slower than that found in most earlier studies of regional economies of indus-

eralism, helped to equalize per capita incomes across the states of India? Second, has labor flowed freely across states in response to differentials in per capita incomes, and how has this affected convergence? Of course, state policies may have an impact; however, our study did not explore this issue.

Center-state relations

The need to maintain a strong sense of national unity was clearly recognized during 1947-50, when the Indian constitution was drafted. Consequently, within the framework of a federal system, the constitution gave strong political and economic powers to the center. Of particular importance was the power to allocate financial resources between the center and the states. The constitution also provides for the establishment every five years of a finance commission to review and determine the distribution of tax revenues both between the central and state governments, and across state governments.

Transfers and grants. Given the vertical imbalance between the resource-raising powers and expenditure needs of the center and the states, the constitution has provided for a complex mechanism of transfers from the center to the states. Essentially, there are three

direct channels: statutory transfers (comprising tax sharing and grants-in-aid) through the finance commission; plan grants through the planning commission; and "discretionary" grants through central ministries, primarily for centrally sponsored schemes. There also exist indirect channels, such as loans from the central government and the allocation of credit by financial institutions controlled by the central government. Of total gross transfers from the center to the states in 1991, some 34 percent comprised shared taxes, 32 percent grants, and 34 percent gross loans.

Features of Indian states

Although the Indian states have long shared common political institutions and national economic policies, the wide diversity in geographic, demographic, and economic features is also readily apparent. While the states of central India—Madhya Pradesh, Rajasthan, and Maharashtra—are the largest in terms of land area, the eastern states—Uttar Pradesh and Bihar—have the largest populations. The states that lag far behind the others in literacy rates and in reducing death rates are Uttar Pradesh, Bihar, Madhya Pradesh, and Rajasthan—these states also have the highest birth rates.

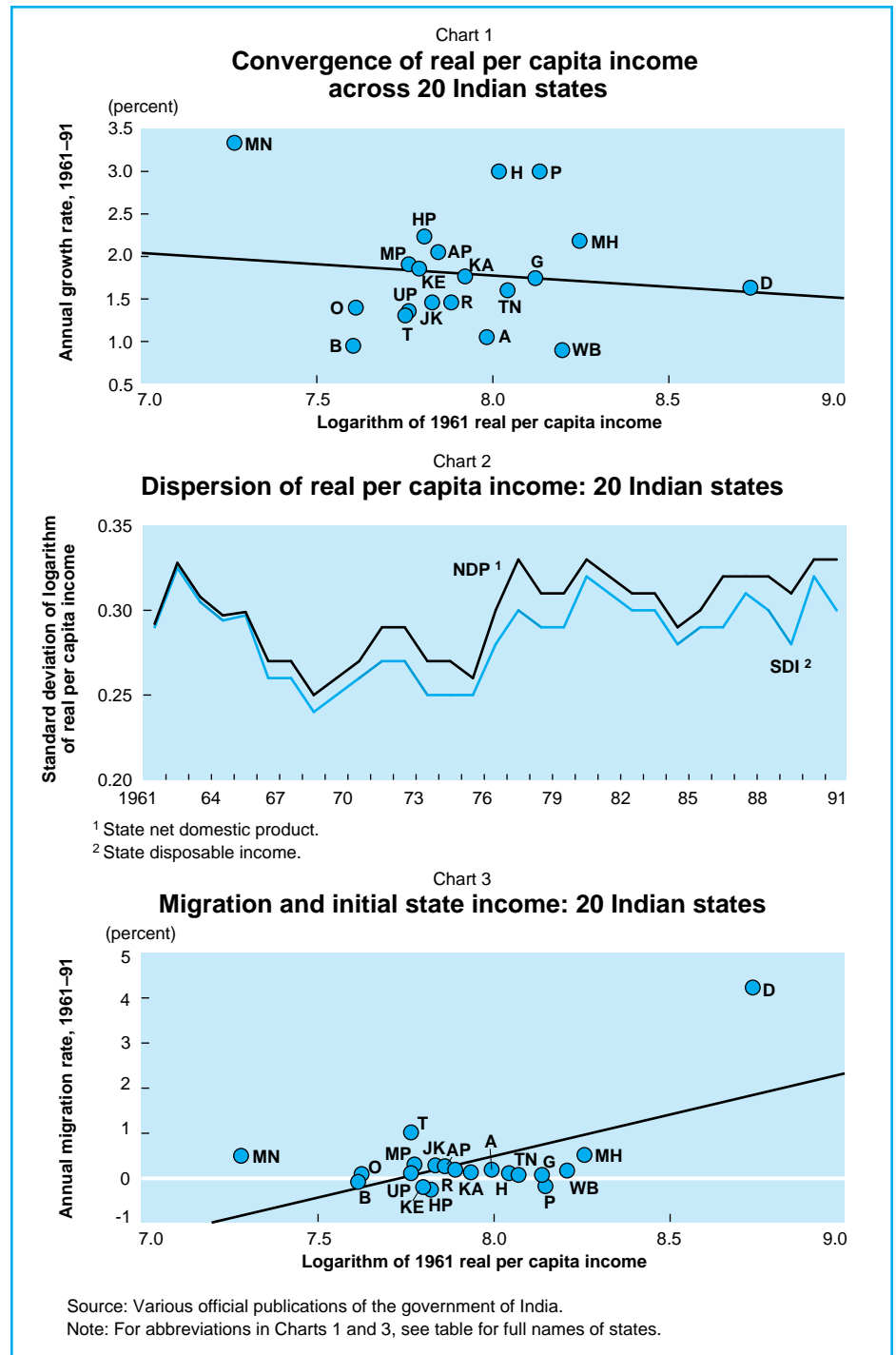
trial countries (Australia, Canada, Japan, and the United States), and where the rate of convergence has been found to be about 2 percent per year. Moreover, the speed of convergence of Indian states is slower than that between European Organization for Economic Cooperation and Development (OECD) countries, a surprising result since one would expect convergence within national boundaries to be faster than across borders.

Dispersion of state incomes

Over 1961–91, the dispersion of real per capita incomes across the Indian states has widened, except for the subperiods 1962–68, 1972–75, 1977–78 and 1980–84 (Chart 2). The dispersion of real per capita NDP across the states narrowed between 1961 and 1971 owing to robust growth rates in initially poor states (Manipur, Kerala, and Himachal Pradesh) and slow growth rates in initially rich states (Delhi, West Bengal, and Maharashtra). However, in the 1971–81 and 1981–91 subperiods, the initially poor states (Manipur, Bihar, and Orissa in 1971; Bihar, Assam, and Orissa in 1981) and the initially rich states (Delhi, Punjab, and Haryana in 1971; Delhi, Punjab, and Maharashtra in 1981) had similar rates of economic growth.

This widening of the dispersion of real per capita NDP for the Indian states contrasts with the pattern seen in several industrial countries (Australia, Japan, and the United States). One explanation for the observed pattern of income dispersion for India is that its long-run value is about 0.32, a relatively high number, and the actual value of the dispersion should remain close to this level until there is an aggregate shock that differentially affects the states. Interestingly, India's long-run value of the dispersion of per capita incomes is over twice the level of those for regional economies in Australia, Japan, and the United States, and most likely reflects higher barriers to the free flow of capital and labor across the Indian states than in the developed economies.

Role of grants. Chart 2 also plots a measure of the dispersal of per capita state disposable incomes (SDIs), where aggregate state disposable income is defined as aggregate state NDP plus center-state grants. Due to the unavailability of data, our measure of the dispersion of SDI does not include center-state grants to Delhi. Given the presence of center-state grants, which are allocated more to relatively poor states than relatively rich states, we would expect the dispersion of state per capita income to be greater for NDP than SDI. This is indeed the case, as the dispersion of NDP exceeds the dispersion of SDI for all years. Accordingly, center-state grants have been operating to equalize per capita incomes



across the 20 states—the poor states are the relative beneficiaries of this aspect of Indian fiscal federalism, at the expense of their relatively rich counterparts.

The gap between the dispersion of SDI and the dispersion of NDP widened considerably after the mid-1960s, which reveals the much greater role played by center-state grants after this date. That is, while the dispersion of per capita NDP has widened, grants to relatively poor states increased over the 1961–91 period. The result has been relatively little change

in the dispersion of per capita SDI across the states of India, as grants have compensated for the widening dispersion of the per capita NDP component of per capita SDI.

The effects of migration

In addition to capital movements, an important mechanism by which differences in cross-regional per capita incomes can be equalized within national economies is by population movements from relatively poor to relatively rich regions. Interstate migration in India is of

particular interest, because of the heterogeneity of per capita incomes and demographic characteristics across states.

Income levels and migration. Chart 3 reveals the relationship between the annual average net immigration rate between 1961 and 1991 and the logarithm of real per capita income in 1961. The relationship is clearly positive, which is evidence in favor of the proposition that net immigration is positively affected by cross-state differentials in per capita incomes.

The extremely strong attraction of Delhi with respect to the rest of India is indicated by much higher net immigration rates than would be suggested by its initial level of per capita NDP. While this effect would still be positive in the absence of Delhi, the relationship of migration to initial income would have been much weaker. Delhi has attracted migrants for several reasons. First, the differential in per capita incomes between Delhi and all other states has been substantial. This is likely to induce large-scale immigration, even if the prospects for employment in Delhi were limited. Second, the private sector (industry and services) expanded rapidly between 1961 and 1991. In the highly regulated economic environment of this period, physical proximity to a strong central government was a key to success in lobbying efforts. Finally, the central government itself, along with other public sector companies, has expanded and absorbed a growing labor force.

Our study found that a 10 percent differential in per capita income would raise net immigration to (and hence the population of) each state by only 0.012 percentage point per year. Accordingly, the response of migration to income differentials across the states of India more closely resembles the weak responsiveness of population movements to income differentials observed in the regions of Europe, rather than the stronger response of migration to income differentials across the states of the United States or the prefectures of Japan. Implicitly, the costs of cross-regional labor mobility are high in India and Europe—they are relatively low in Japan and the United States. The anemic response of cross-state migration to income differentials in India is most likely due to a combination of barriers to the mobility of labor: strong local workers' unions, which act to keep out competing potential employees; rigidities in nominal wages; lack of housing in fast-growing urban areas; and, most important, social, cultural, and linguistic barriers to the cross-regional substitutability of labor.

Migration and convergence. As argued above, migration from poor to rich states should accelerate the speed of convergence of

Time period and data

The study considered regional economic growth and convergence over 1961–91, using data on 20 states of India. In 1991, India comprised 25 states and 7 union territories; in 1961, there were 15 states and 12 union territories. In 1991, the 20 states studied here accounted for 93.1 percent of India's net national product (at factor cost) and 99 percent of India's population; the corresponding figures for 1961 were 90.1 and 99.3 percent, respectively.

Income, population, price, and migration data are from official government of India sources, to ensure consistency in definition and compilation and to aid the comparability of data across states and through time. A measure of income is per capita state net domestic product (NDP) in constant (1990 rupees) prices. The state-based aggregate NDP estimates are analogs of national NDP—they measure income originating from factors of production physically located within the boundaries of each state, and represent the value of goods and services produced within a state. A second measure of income is per capita state disposable income (SDI), which is derived by adding the per capita grant component of

center-state transfers to per capita NDP. The state-based SDI estimates are analogs of national disposable income—they represent the total income available to residents of a given state for consumption and saving.

The study examined transfers to determine whether, as was intended, they served the purpose of reducing regional income disparities by allocating relatively greater grants to low-income states. Since not all transfers defined in the Indian context are intended to reduce such disparities, we used, for estimation purposes, data published in state budgets that can best be singled out as outright intended grants. Specifically, these include statutory grants-in-aid, grants for plan purposes, and grants for centrally sponsored schemes. Thus, we excluded from the typical Indian definition of transfers those designed for center-state tax sharing and indirect transfers through loans. Accordingly, our estimate of what we call grants understates to some extent the role played by the center in reducing regional disparities.

per capita incomes across the 20 states of India. If so, then the estimated speed of convergence also embodies the contribution of migration. Accordingly, immigration should have a negative effect on the rate of growth of per capita incomes and reduce the speed of convergence.

After taking into account exogenous shocks and the effect of migration, the results of our study yield the same rate of convergence (of about 1.5 percent per year) as when only exogenous shocks were considered. This suggests that the process of migration has little effect on the convergence of per capita incomes across the states of India.

Conclusions

Have the initially poor economies of India grown faster than their initially rich counterparts over 1961–91? The answer is yes. After taking into account the sectoral composition of the 20 states, about 1.5 percent of the gap between real per capita incomes in rich and poor states was closed each year during 1961–91. This implies that, in India, it would take about 45 years to close half the gap between any state's initial per capita income and the states' common long-run level of per capita income. In an industrial country, it would take only about 35 years.

This study also finds that over 1961–91, there was a widening of the dispersion of real per capita NDP for the Indian states. This pattern contrasts sharply with that found in industrial countries such as Australia, Japan, and the United States. Grants from India's central government to the states did ensure that the dispersion of states' real per capita disposable incomes was narrower than the dispersion of states' real per capita incomes, as relatively more grants were transferred to poor states than to their rich counterparts. Net immigration across states responded weakly to differentials in state per capita incomes, which indicates that there are sizable barriers to labor flows across the states of India. Finally, in keeping with previous studies of the regions of developed countries, there is little evidence that cross-state migration is an important cause of the convergence of real state per capita incomes in India. **F&D**

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