INVESTMENT AND ECONOMIC OPPORTUNITIES: URBANIZATION, INFRASTRUCTURE AND GOVERNANCE IN THE NORTH AND SOUTH OF INDIA

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There are substantial disparities across the southern Indian and northern (Bihar, Madhya Pradesh, Rajasthan and Uttar Pradesh) states in terms of fundamental economic phenomena, such as per capita net state domestic product, rural and urban poverty rates, and investment flows, with the southern states taking a lead over their northern counterparts. In this paper, we make an attempt to understand what factors have caused some states to grow faster than others. We examine human capabilities, skills and awareness, resources and the efficiency of their utilization, extent of urbanization, good governance including law and order, and infrastructure across the two group of states. We conclude that the upward shift in per capita income, downward trend in poverty reduction and investment flows that occurred in the south relative to that in the northern states can be explained partly by the advantage the former had in terms of human capabilities, infrastructure, urbanization and some law and order conditions and partly by the economic liberalization of 1991.

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Key words: Indian states, regional disparities, southern Indian states, northern Indian states, governance.

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I. INTRODUCTION

It is now well known that, in India, there is substantial variation in income across states. For instance, the per capita net state domestic product (NSDP) of the southern state of Tamil Nadu was Rs 14,000 (in 1993-94 prices) in 2004-05, whereas the NSDP of the northern state of Uttar Pradesh was only Rs 6,138 for the same year (in 1993-94 prices), less than half that of Tamil Nadu (based on data from the Economic and Political Weekly Research Foundation (EPWRF)). Similarly, according to data from the Department of Industrial Policy and Promotion, Ministry of Industry, Government of India, Maharashtra, Dadra and Nagar Haveli, Daman and Diu together accounted for nearly 32 per cent of all foreign direct investment (FDI) inflows into the country, and Delhi, parts of Uttar Pradesh and Haryana accounted for 18 per cent, whereas Uttar Pradesh and Uttaranchal accounted for less than 0.02 per cent of all FDI inflows into the country. In fact, Dreze and Sen (1997) point out that some of the southern Indian states have been growing at the rate of countries in East Asia, such as Singapore, whereas some states in the north have been crawling at the rates of those in sub-Saharan Africa causing an eventual fault line to develop between the states.

While the state has policymaking power, throughout this paper we compare the four southern Indian states (Karnataka, Kerala, Tamil Nadu and Andhra Pradesh) with the northern states of Bihar, Jharkhand, Madhya Pradesh, Chhattisgarh, Rajasthan, Uttar Pradesh, and Uttarakhand. This is defensible as regions can be viewed as common markets which consist of several states and which facilitate the movement of ideas, goods and services.

A comparison of this kind between the northern and southern states mentioned above is defensible because Punjab, Haryana and the western states of Gujarat and Maharashtra have been high on the economic performance scale ever since independence. For instance, as early as 1960-61, the per capita incomes of Punjab, Haryana, Gujarat and Maharashtra were respectively Rs 4,923, Rs 4,614, Rs 4,904 and Rs 5,527, compared with only Rs 3,338 for Uttar Pradesh (all in 1993-94 constant prices).[1] The southern states surged sometime in the recent past, in the 1980s or 1990s (this is something we will discover in the forthcoming analysis).

[1] One could argue that Rajasthan has moved out of this league of poor-performing states recently (as pointed out by Ahluwalia, 2000). Rajasthan has been in this league of slow growing states historically, and its growth is only a recent phenomenon. So we retain Rajasthan in our set of northern states, our objective being to study longer run trends. One could also make a case for including Orissa, which has also lagged economically, in the list of northern states. Orissa, being in the east, does not enter the north-south debate that is the focus of our work here. In the section on research objectives and literature survey, we clearly lay out the scope of our paper.

With the exception of Rajasthan, which has been only recently surging (see Ahluwalia, 2000), the northern states have remained behind. As Paul and Sridhar (2009) and Ramachandra Guha point out, historically the north was viewed as the region which was growing and where job opportunities were being created whereas the southern states were viewed as laggards. In recent years, however, this has changed, with the southern states surging economically. Hence, a study of the four southern states with their northern counterparts offers interesting lessons in contrast.

In our comparisons of the northern region, we include the three newly created states (Uttarakhand, Jharkhand and Chhattisgarh) along with their parent states because the new states were carved due to stark intra-state disparities and their backwardness. Also, when we are comparing the pre-2000 period with the post-2000 period (2000 being the year in which the three new states were created), it is necessary to account for them in the interests of comparability.

Before we examine the record of investment into these states, it is instructive to examine the differences in basic economic phenomena, such as NSDP and poverty rates. As discussed, these fundamental economic phenomena show remarkable differences between the southern and northern states when observed over a period of time. Observing these phenomena over a long period of time has the advantage of demonstrating whether such disparities are a recent phenomenon or have existed for a prolonged period of time. Nunn (2009) provides a survey which gives a growing body of empirical evidence pointing towards the important long-term effects that historic events have on current economic development.

This paper is organized as follows. The next section presents the research objectives followed by the literature survey, which summarizes past literature on the subject. This is followed by a section on the methodology followed by a description of trends in various explanatory factors – human capabilities, skills and awareness, resources and the efficiency of utilization, extent of urbanization, good governance, including law and order, and infrastructure**,** which are presented for the southern and northern states. The final section pulls all findings together, summarizes the implications of the work and concludes.

II. RESEARCH OBJECTIVES

In this paper, we answer the question why some states have grown faster than others. An interesting issue to be explored in this context is whether a productive agricultural sector is a prerequisite for the growth of a manufacturing sector or whether comparative disadvantage in agriculture stimulates the growth of a manufacturing sector to ensure survival. One hypothesis is that with the relative

growth of manufacturing, the southern states may be growing faster than the northern states, which have a comparative advantage in agriculture.

To understand the questions above, we observe trends and differences in economic phenomena, such as per capita income, poverty rates and economic opportunities such as investments and FDI flows observed across the southern and northern Indian states. As indicators of explanatory factors, we examine human capabilities, skills and awareness, resources and the efficiency of the utilization of those skills, the extent of urbanization, good governance including law and order, and infrastructure across the southern and northern states. We present trends in important indicators of these differences in economic phenomena and explanatory factors, following the literature survey in the next section.

III. LITERATURE SURVEY

There is a vast amount of literature dealing with economic growth and on convergence/divergence in Indian states. There is also a lengthy literature on intergovernmental transfers in India which shows how the fiscal disparities of the poorer states have not been adequately offset by the transfer system and how various types of subnational transfers can discourage equalization (Rao and Singh, 2005). Our paper should not be viewed as an addition to the general literature on interstate disparities. There is another strand of literature which examines the sources and timing of the shift in Indian output growth since the 1980s. This literature addresses a variety of questions such as: When did the shift in growth occur? Was the shift uniform across states? What were the factors causing the shift? Based on a review of this literature, we find that none of the studies take the distinct, north-south approach we take in this paper.

We divide this literature survey into parts – one part dealing with the timing and extent of disparities among Indian states, and another part critically summarizing the literature which explains the factors behind interstate differentials, highlighting the contribution of this work.

Disparities across Indian states

First, we discuss the literature on disparities across the Indian states and the timing of the shift, if any. Nair's (1982) pioneering analysis covered 14 major states. The study showed that interstate disparities in per capita NSDP, as measured by the coefficient of variation (CV), had declined over the period 1950-51 to 1964-65, but increased between 1964-65 and 1976-77. Unfortunately, this paper is quite dated and does not take into account post-1983 developments.

Roy Choudhury (1993) examines interstate disparities and reported that the coefficient of variation (CV) of per capita NSDP in current prices had increased between 1967-68 and 1977-78, but declined between 1977-78 and 1985-86. However, the CV in terms of constant prices showed a persistent increase during the entire period 1967-68 to 1985-86. While this kind of analysis is useful for purposes of this work, Roy Choudhury's (1993) study does not cover enough of the post-liberalization period for us to make an assessment.

Dholakia (1994) in his analysis of interstate disparities in growth rates of 20 Indian states over the 30-year period 1960-61 to 1989-90 identified empirically the optimal years of shift in growth separately for each state through the estimation of a kinked exponential trend curve model. This analysis is interesting, but does not delve into causes of the interstate disparities in growth rates, which is much required and is attempted in this paper.

Das and Barua (1996) examined several dimensions of regional economic disparities among 23 states/union territories during the period from 1970 to 1992. It was found that interstate inequality increased in almost all sectors. This paper suffers from the same limitation as the earlier papers in that it does not attempt to explain the inequality in the sectors among the states.

Mathur (2001) analysed several facets of national and regional economic growth since the 1950s, with a specific focus on the 1980s and 1990s. The study reported a steep acceleration in the coefficient of variation of per capita incomes in the post-reform period of 1991-96, just as we find here (see the next section on trends in various indicators). A tendency towards convergence was noticed within the group of middle-income states, while divergence was evident within the groups of high- and low-income states. Unfortunately, the paper goes no further in explaining the convergence or divergence among the states, but some of its findings are of relevance to what we find in this paper.

Kurian (2000) drew attention to interstate disparities by presenting recent data for Indian states on demographic characteristics, social characteristics, magnitude and structure of SDP, poverty ratio, developmental and non-developmental revenue expenditures, eighth plan outlay and its sectoral distribution, disbursal of financial assistance for investment, indicators of physical infrastructure development and of financial infrastructure. The paper found that a sharp dichotomy between the forward and backward groups of states had emerged.[2] This paper takes a holistic

[2] Kurian's (2000) forward group consists of Andhra Pradesh, Gujarat, Haryana, Karnataka, Kerala, Maharashtra, Punjab and Tamil Nadu. The backward group comprises Assam, Bihar, Madhya Pradesh, Orissa, Rajasthan, Uttar Pradesh and West Bengal.

view of development in the states, but does not explain the causes of the observed dichotomy. Kurian also groups together all states with high per capita income and others with low per capita income, without making a distinction as to when these changes occurred.

Wallack (2003) finds evidence for a break in the GDP growth rate in the early 1980s. This is close to the result reported by Rodrik and Subramanian (2005). Hausmann and others (2005) analyzed transitions to higher growth in a large cross-national sample, and date the Indian growth break to 1982. However, their paper primarily deals with India in a cross-national sample and attempts to explain the Indian growth take-off in the early 1980s. They do not delve into the subnational or regional levels, as we do here.

Virmani (2006) finds that the growth rate of manufacturing in Indian states accelerated after 1980-81, and this contributed to the acceleration in growth of GDP from 1981-82. Virmani finds no additional breakpoints in the 1990s once the breakpoint in 1980-81 is accounted for. It can be stated that the purpose of all these studies appears to be to examine when a break appeared in the growth rate of Indian states without worrying about why or how the break occurred.

In contrast to Virmani (2006), Balakrishnan and Parameswaran (2007) find that the break in the growth rate of GDP occurred in 1978-79 – with the 1978-79 take-off in growth occurring prior to the positive break in manufacturing (1982-83). This suggests that the evidence for manufacturing having served as a primary engine of growth through appropriate market reforms is weak.

In all fairness, in addition to the literature which summarizes the disparities among the states and the timing of a shift, there is a stream of literature which attempts to explain the interstate growth differentials. The next subsection summarizes this literature.

Explanation of interstate growth differentials

So far, a number of studies have attempted to explain the interstate differentials among Indian states.

One of the earliest studies is a study of the northern and southern states in the United States of America by Olson (1984). This study explains the differences in economic performance in terms of endowments, policies and institutions. The independent variables include: the level of urbanization in 1889, lawyers per 100,000 of the population, and labour union membership and the dependent variable is the economic growth rate. The hypothesis is that distributional coalitions should be more

powerful in places that have had stable freedom of organization. In the American study, the hypothesis is supported by regression results. Needless to say, this work is inspired by some variables used in the American study by Olson (1984).

Ahluwalia (2000) explains interstate differences in the economic performance in terms of market development and the ability of Indian states to take advantage of economic liberalization. He finds and argues that Rajasthan and Madhya Pradesh have performed reasonably well in recent years.

Sachs and others (2002) attempted a detailed qualitative assessment of the factors behind interstate growth differentials, and listed several possible hypotheses for the lack of unconditional convergence among Indian states:

(a) The geographical differences in India are larger than in the United States, Europe and Japan;

(b) Population movements in India respond very slowly to income differentials;

(c) Policies of the national or state governments do not facilitate convergence;

(d) Economic convergence is slower at lower levels of economic development, as in India.

They also found that coastal access and climate are also factors in convergence, but they did not take into account the role of governance factors.

In a largely agricultural country such as India, agricultural growth also may be expected to have some impact on growth. Panel data regressions by Shand and Bhide (2000) utilizing data from 15 states over three time periods (1972-82, 1982-90, and 1992-95) suggested that agricultural growth has a positive impact on industrial and service sector growth. Agricultural growth, in turn, was affected positively by land productivity in agriculture and negatively by the share of agriculture. While the regression results are useful in understanding growth, the paper does not go beyond economic factors.

It is plausible that a state's initial distribution of income and private investment impacts its current per capita income. Rao and others (1999) analyzed the determinants of growth of per capita SDP with data for the 14 major Indian states. The coefficient on the initial income variable was significantly positive in the regressions for longer periods (1965-94, 1970-94 and 1975-94). The variable indicating private investment was found to be the most important determinant of growth. Next in importance was the literacy variable. We find this paper ignores the role of non-economic factors, such as governance.

Nagaraj and others (2000) gathered various factors together and used panel data for 17 states for the years 1960-94. The growth regression included, apart from lagged per capita SDP, the share of agriculture, the relative price of agricultural and manufactured goods, several infrastructure indicators and fixed effects for states as explanatory variables. Evidence for conditional convergence was found. The results of the study suggested that focusing investment efforts on physical infrastructure (electricity, irrigation and railways), and social infrastructure (human development) would raise the overall effectiveness of public investment and raise growth. However, factors such as law and order and health-related indicators such as infant mortality explain differences in growth, which are not taken into account by this paper.

It is clear that urbanization and industrialization have a role to play in increasing per capita income. Ghate and Wright (2008) find that the ratio of Indian to United States per capita output over the past 45 years has displayed a distinctive V-shaped pattern.[3] They show that a strikingly similar V-shaped pattern is visible not just in aggregate output figures, but also as the primary determinant of long-term movements in the cross-sectional distribution within the all-India total, at both sectoral and state output levels. They also carry out preliminary investigations of correlates of the "V-factor", using a new panel data set for Indian states from 1960 to 2005 that extends and encompasses all previous data sets relevant to macroeconomic analysis of the Indian states. Ghate and Wright (2008) find that "V" states:

- Were on average more urbanized and more literate;[4]
- Were somewhat more industrialized and somewhat less dependent on agriculture;
- Spent somewhat less on development (revenue expenditure) than non-"V" states.

We find that Ghate and Wright (2008), like the others, focus on economic factors, such as infrastructure, but do not take into account the role of law and order or political factors in explaining growth. It is reasonable to expect that the law and order situation in a state would impinge upon private investment, economic growth

[3] Their approach in using the United States as a benchmark may be debatable, but given that the United States is the head of the technological frontier and the standard neo-classical model would predict that growth rates converge to the country on the technology frontier, their choice is somewhat understandable.

[4] Their "V" states are: Andhra Pradesh, Gujarat, Karnataka, Kerala, Maharashtra, Madhya Pradesh, Orissa, Rajasthan, and West Bengal. Their non-"V" states are: Assam, Bihar, Uttar Pradesh, Punjab, and Haryana. The latter two are included in the non-V states because they fit the convergence model (higher average income in the 1980s, lower growth in the 1990s).

and the environment. States which are in turmoil with regard to law and order would not be viewed as good places to do business.

While per capita income is only one measure of economic performance, there are studies that examine reduction in poverty. Agricultural productivity determines the extent of rural poverty. Datt and Ravallion (1998) study the causes of rural poverty in a developing rural economy and question as to why some Indian states have done better than others at reducing rural poverty. They model the evolution of various poverty measures using pooled state-level data for the period 1957-91. Differences in trend rates of rural poverty reduction are attributed to differing growth rates of farm yield per acre and differing initial conditions; states starting with better infrastructure and human resources saw significantly higher long-term rates of poverty reduction. Deviations from trend are attributed to inflation (which hurt the poor in the short term) and shocks to farm and non-farm output. This paper, while being quite insightful, unfortunately does not cover institutional factors, such as the existence of the minimum support price to farmers and their impact on reducing rural poverty.

In addition to agricultural growth, productivity, initial income, private investment, infrastructure, urbanization and industrialization, we would expect sweeping changes in policy also to affect economic performance. Rodrik and Subramanian (2005) argue – in similar vein to Virmani (2006) – that the improvement in India's economic performance was driven by policy changes. In particular, Rodrik and Subramanian argue that the trigger for India's upward break in growth – which they pin down to around 1980 – occurred because of an "attitudinal shift" on the part of the national Government in 1980 in favour of businesses. While taking a cross-national focus, this is one of the few papers that take into account the importance of non-economic factors in growth, which needs to be noted.

Similarly, Basu (2004) provides empirical evidence from a study of 16 major Indian states for the period from 1980 to 2001 that, under the economic reform process, better institutional mechanisms could actually help economies to grow faster with higher level of economic well-being. This paper estimates the economic well-being index (by aggregating 15 socio-economic variables, i.e., education, infrastructure, technological progress, income, and so on) and an index of good governance (by aggregating 13 variables indicating rule of law, government functioning, public services, press freedom, and the like) by multivariate statistical measures. Panel regression showed that governance measures, and economic policy variables are crucial to explain the differential level of development performance across states in India during the last two decades. It is worthy to note that this is one of the few papers to take into account the impact of governance and institutional factors on differential economic performance of the states.

An important survey article on interregional disparities by Krishna (2004) focuses on issues of growth variability and volatility in Indian states. The coefficient of variation of year-to-year growth rates for a state is used as a measure of volatility. The four most volatile states in India were Orissa, Rajasthan, Gujarat and Uttar Pradesh while the three least volatile states were Punjab, Maharashtra and Kerala. However, volatility has been declining at the national level since the 1980s. The author notes that the dispersion of growth rates of states increased considerably in the post reform period (from 15 per cent in the 1980s to 27 per cent in the 1990s). Further analysis shows that agriculture has a positive impact on industrial and service sector growth. Also, social infrastructure is an important determinant of the investment decisions. The author however stresses that there is a need to explore other approaches to explain economic growth from all perspectives.

Ashraf and others (2008) assess quantitatively the effect of exogenous health improvements on output per capita in general (not with specific reference to India). They find that the effects of health improvements on per capita income are substantially lower than those that are often quoted by policymakers, and may not emerge at all for three decades or more after the initial improvements in health are implemented. These results suggest that proponents of efforts to improve health in developing countries should rely on humanitarian rather than economic arguments.

Ghosh (2006) evaluates the relative performance of 15 major Indian states regarding human development, and examines the relationship between this and economic growth. The estimates of cross-sectional growth regressions provide strong evidence of regional convergence in human development despite considerable divergence in real per capita income, indicating that the poor states that have failed to catch up with the rich ones in terms of per capita income have managed to catch up in terms of human development. The results suggest that the sequencing of policy should be such that the human development-induced growth process has to be strengthened so that states can transition from a vicious to a virtuous cycle category. Although the findings from this paper make sense, it focuses only on the relationship between human development and economic growth without taking into account other factors that impinge upon economic performance.

Banerjee and Iyer (2005) analyze the colonial land revenue institutions set up by the British in India, and show that differences in historical property rights institutions lead to sustained differences in economic outcomes using district-wise growth rates. They find that areas in which proprietary rights in land were historically given to landlords have significantly lowered agricultural investments and productivity in the post-independence period than in areas where these rights were given to the cultivators. This is similar to the effects Besley and Burgess (2000) find for the impact of land reform on rural poverty.

While the differential rate of growth among Indian states and the issue of convergence have been probed extensively, as is clear from the literature reviewed above, few studies have searched for an explanation for the difference between the northern and the southern Indian states, taking into account the role of both economic and non-economic factors. While past research had focused mostly on economic factors, we take into account both economic and non-economic factors, such as law and order, that impinge upon growth in the northern and southern Indian states. The next two sections briefly describe the methodology used in the paper to answer these questions, and focus on analysing economic trends as well as other explanatory indicators used in this study.

IV. METHODOLOGY

The theory is that growth in emerging economies is driven by differences in human capabilities, skills and awareness, resources and their utilization, extent of urbanization, good governance (including law and order), and infrastructure. We believe these factors explain the disparities in investments, economic opportunities and other economic phenomena, such as poverty and per capita income. Below we describe trends in the indicators we have chosen for each of these factors and then discuss them. We attempted several regressions (see Sridhar and Reddy, 2009) but did not have long enough time-series data for informative results. Therefore, we do not report them here.

Most of the data we examine as it relates to economic phenomena, investment opportunities, human capabilities and skills (educational and health indicators), infrastructure, urbanization, and resource utilization exists from the 1980s onwards (although some exist only decennially for the census years). Reasonable time-series data (going back to the 1960s) does not exist for all the indicators (with the exception of per capita net state domestic product (NSDP) and installed generating capacity (of electricity)). Hence, we first examine historical trends in each of the above indicators to study if some relationship exists between economic phenomena, and urbanization, governance, infrastructure and human capabilities. As discussed above, observing these phenomena over a period of time has the advantage of demonstrating whether such disparities across the southern and northern states are a recent phenomenon or whether they have existed for a long period of time.

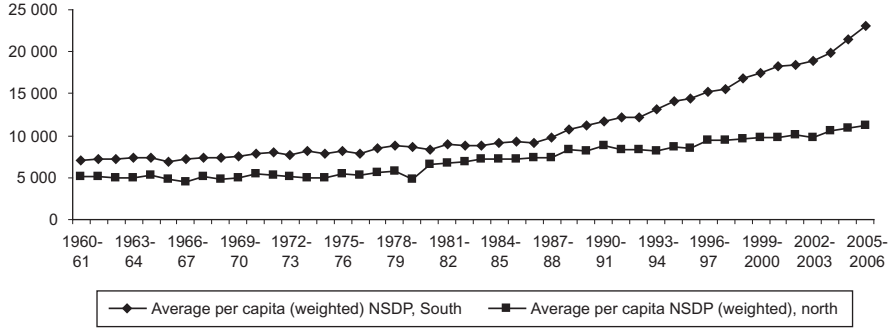
V. TRENDS IN SOCIO-ECONOMIC INDICATORS

In this section, we present trends in various socio-economic indicators, such as domestic product, poverty, investment and economic opportunities more generally for the northern and southern Indian states separately.

It is easy to believe that per capita income is determined by private investment, which creates jobs and income. Per capita income is one of the most fundamental economic phenomena which reflect economic living conditions of the population. This is one variable on which a reasonably long time series of data was available (unlike the poverty rate, data on which was available only for a few years). Hence, per capita NSDP was chosen as a measure of aggregate economic performance of the states, as is commonly done.

Figure 1 summarizes the trend of the average weighted per capita NSDP of the southern states (Karnataka, Kerala, Andhra Pradesh and Tamil Nadu) and the four northern states (Bihar, Madhya Pradesh, Rajasthan and Uttar Pradesh).[5] This figure shows that, on average, the per capita NSDP of the southern states (weighted with population) is on a much higher trajectory compared with that of the northern states.

Figure 1. Trends in per capita NSDP, southern and northern states, 1960-06, 1999-00 prices



Source: EPWRF and Authors' computations.

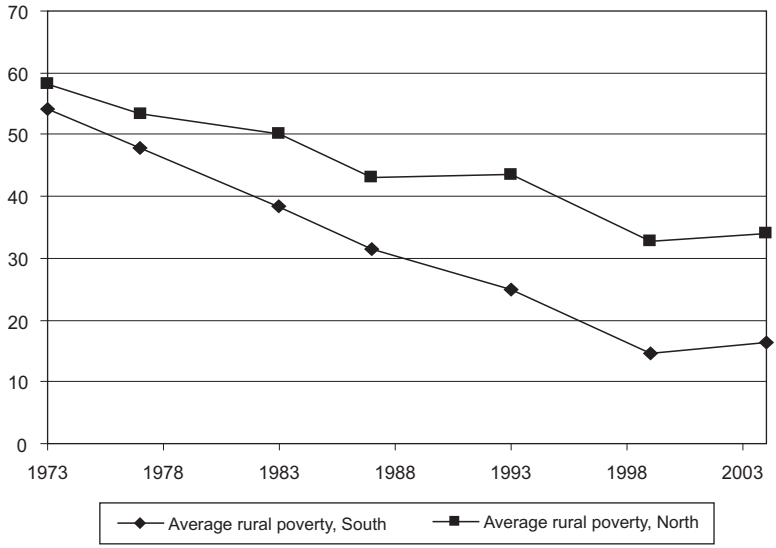
[5] For purposes of reasonable comparison, the data for Bihar, Madhya Pradesh and Uttar Pradesh include data for Jharkhand, Chhattisgarh and Uttaranchal respectively from 1993-94 onwards. Although these three new states themselves came into existence only in 2000, the EPWRF had reconstructed the population and NSDP data series for the new states from 1993-94 onwards, based on the new districts forming these states.

Further, the divergence between the two groups has been increasing since the early 1990s.[6] This is a source of concern.

We corroborate the disparities in per capita income with data on rural and urban poverty in the southern and northern states. While aggregate per capita income portrays the general economic conditions of the state, the prevalence of poverty indicates the extent of distress. The rural and urban poverty data paint a picture similar to that of the NSDP, showing greater prevalence of economic distress in the northern states. Figure 2 summarizes the disparities in rural poverty (weighted with the population of each respective state) between the southern and northern states. The rural poverty rate summarized in figure 2 refers to the proportion of rural population in the states living below the poverty line.

Figure 2 shows that the extent of rural poverty is much greater in the northern than in the southern states, where it has been declining at a more rapid rate (since 1988) than in the northern states and the disparities are widening.[7] The extent

Figure 2. Trends in the rural poverty rate, southern and northern states



Source: Planning Commission, Government of India.

[6] These disparities are based on per capita NSDP data when they are expressed in 1999-00 prices. When per capita NSDP is expressed in 1993-94 constant prices as well, one finds a similar trend with the divergence beginning in the early 1990s.

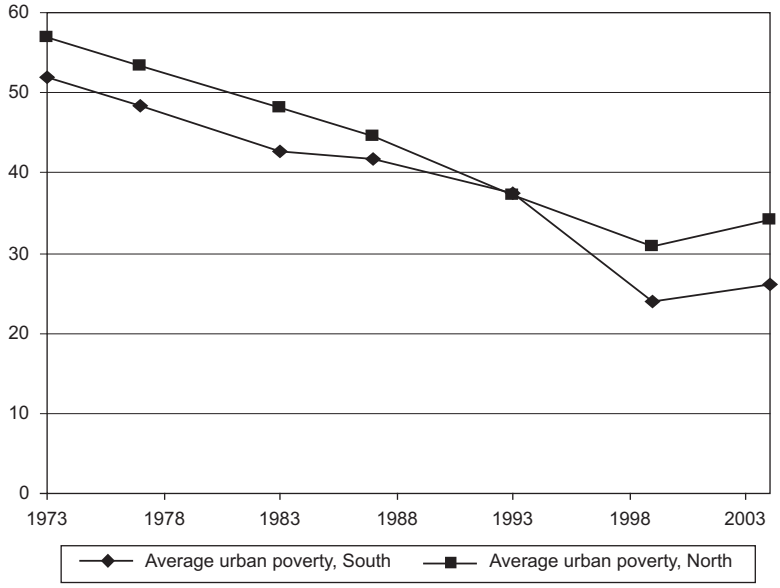
[7] It may be noted that the poverty series in both figures 2 and 3 end in 2004-05.

of rural poverty is directly determined by agricultural yield, agricultural wages and the availability of non-farm employment (see Besley and Burgess, 2000; Fan, and others, 2000).

However, historically, the southern states have not always had this edge. For instance, Datt and Ravallion (1998) report nearly 70 per cent rural poverty each for Tamil Nadu and Kerala in 1960 and 65 per cent for Andhra Pradesh,[8] compared with only a 48 per cent rural poverty rate each for Uttar Pradesh and Rajasthan in 1960. Madhya Pradesh and Bihar had rural poverty rates of about 55 and 65 per cent respectively in 1960, according to Datt and Ravallion. This suggests that poverty was much more acute in the case of the southern states earlier on, but they were able to reduce it rapidly at some point. Our objective is to understand when, how and why this took place.

The disparities in urban poverty rates across the southern and northern states (when weighed with population) are much lower than with rural poverty (figure 3).

Figure 3. Trends in the urban poverty rate, southern and northern states



Source: Planning Commission, Government of India.

[8] Karnataka was the only southern state according to Datt and Ravallion (1998) to have had a lower rural poverty rate of 52 per cent even as of 1960.

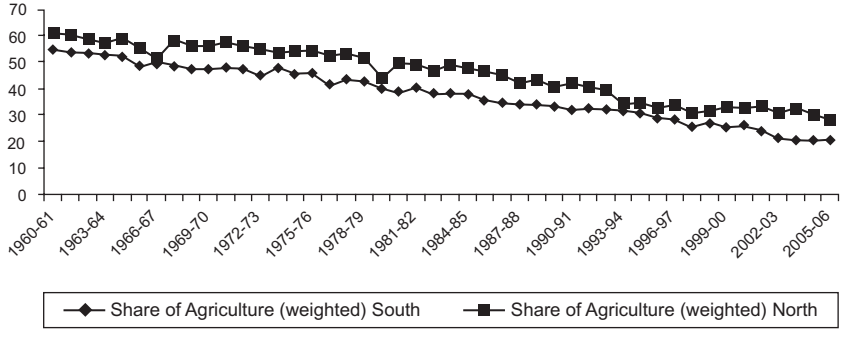
In 1973, the urban poverty rates in the northern states were higher than in the south, but by 1993, the urban poverty rates in both the northern and southern states were the same. They started declining more rapidly in the south (figure 3). While rural poverty is closely related to productivity in the agricultural economy, urban poverty is related to the availability of urban employment, the prevalence of rural-urban migration and the level of urban wages.

Summarizing the disparities in fundamental economic characteristics, the northern states are characterized by lower per capita income with greater rural and urban poverty than the south. The rural poverty rates across the two groups of states started to diverge in 1988, whereas disparities in urban poverty rates started increasing much later, in 1993. Finally, per capita NSDP started diverging in the early 1990s.

Based on their relative performance in aggregate economic phenomena, it is plausible to believe that there are significant disparities between the southern and northern states in terms of their economic environment, opportunities and potential for investment.

Paul and Sridhar (2009) examined which sector(s) led the surge in per capita NSDP which is observed in Tamil Nadu, a southern Indian state as compared with that in Uttar Pradesh, a northern Indian state. Figures 4 to 6 show the trend in the composition of NSDP by sector (respectively agriculture, industry and services) in these two states. In regard to the share of agriculture, Uttar Pradesh is always above Tamil Nadu. In the share of industry, Tamil Nadu scores well over Uttar Pradesh for all but the last couple of years. It did seem that during the last few years, the share of the industrial sector in Uttar Pradesh caught up with that in Tamil Nadu and surpassed it.

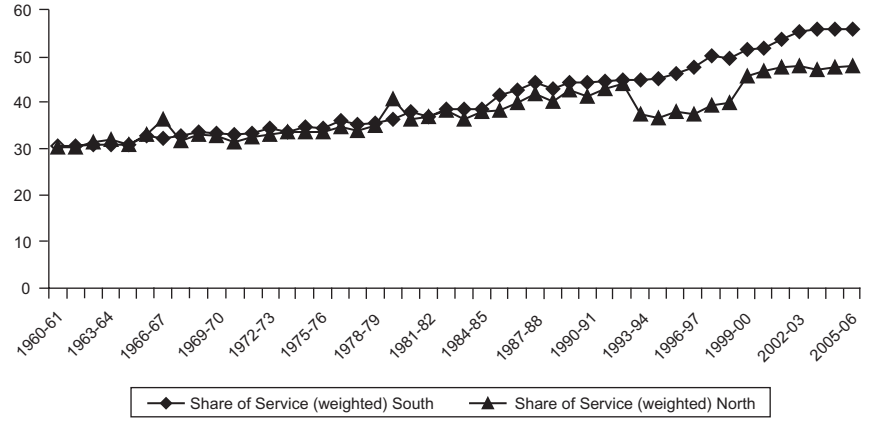
Figure 4. Share of agriculture in NSDP, northern and southern states



The service sector data is interesting. Until 1980-81, the two states were more or less identical as far as the service sector share was concerned. After 1981, however, the service sector in Uttar Pradesh declined in its share in NSDP when compared with that in Tamil Nadu, where there was a constant increase. So there are grounds to believe that the service sector led the surge in per capita incomes in Tamil Nadu. This is consistent with the national growth story.

Figure 5. Share of industry in NSDP, northern and southern states

Figure 6. Share of services in NSDP, northern and southern states



Disparities in investment and economic opportunities

We measure disparities in economic opportunity across the northern and southern Indian states in terms of actual private investment flows (FDI inflows and domestic investments), which are recent phenomena (at least those on which only relatively recent data is available).[9] Actual investment flows are indicators of disparities in economic opportunities because they imply the creation of jobs, income and more broadly, economic growth. They also reflect underlying conditions, such as infrastructure and public services, which influence the location choice of firms (see Sridhar and Wan).

The differences between the southern states and the northern states are very pronounced in terms of the amount of actual investments. Figure 7 summarizes this trend separately for the two groups of states (weighted with population). The south is significantly ahead of the northern states in attracting investment. The northern states are in a permanent low-level equilibrium as far as investment inflows are concerned, with inflows amounting to a meagre Rs 1.7 trillion when compared to the average of Rs 4.74 trillion for the southern states from 1995 to 2003.[10] There is a need to explain these disparities in economic opportunities and lack of investor interest in the northern states.

This is consistent with what Kurian (2000) reports for the states. If these trends continue in investment, the northern states could stand to lose substantially in terms of investment, jobs and income. Clearly, there are some fundamental differences between these two sets of states which need to be explained.

Inter- and intraregional disparities within the country can lead to civil and social unrest. They also can lead to migration resulting in undesirable consequences. Hence, it is important to understand trends in these disparities and study what is causing them. A better understanding of the factors underlying regional disparities will throw better light on economic and investment opportunities available in the Indian states. As a result, researchers, state governments and investors stand to benefit from this research.

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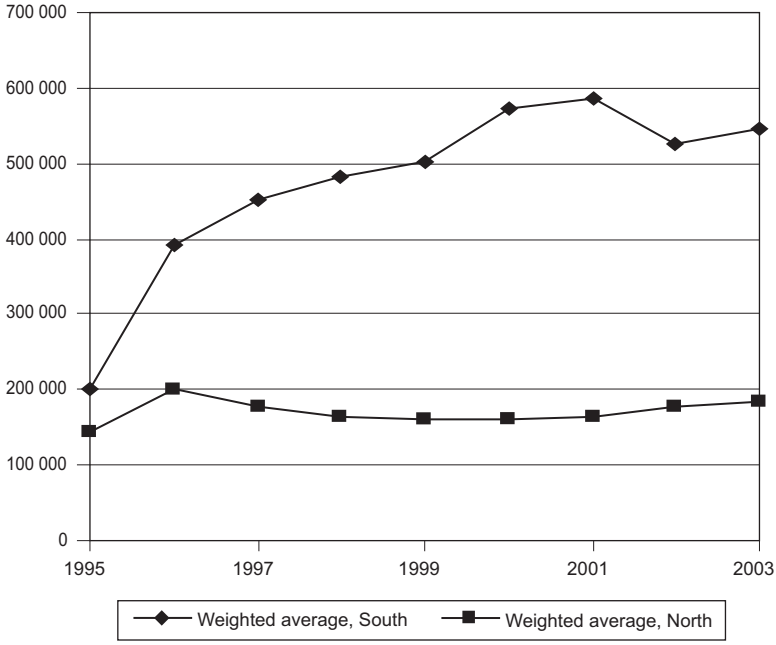
[9] We had data from the Department of Industrial Policy and Promotion, Ministry of Commerce, Government of India, regarding the number and amount of FDI approvals and domestic investments approved. However, given that there usually is a significant difference between the FDI approvals, domestic investment approvals and actual investments, and the number of approvals does not translate in terms of actual investments, we use data on actual investments made by firms in various states, from CMIE's CAPEX database.

[10] The figure presents data for 1995 to 2003. While we had (unweighted) data on actual investment flows until 2009 for all the states we study, the data on population were not available beyond 2003, with the result that we could not report weighted averages beyond that year.

Figure 7. Disparities in actual investment flows, north and southern states



Source: Centre for Monitoring Indian Economy (CMIE) CAPEX Database and Authors' computations.

The following section focuses on indicators for the variables which explain differences in the economic phenomena observed across the northern and southern states. First, we describe what indicators have been chosen for each of the explanatory factors, we then highlight the rationale for the expected effects of each of the variables on economic performance, following which trends in the explanatory indicators are described in a subsequent section.

Indicators of Human Capabilities

Some measures of human capabilities may be represented by education, and health care indicators. More precisely, these education and health indicators might be respectively: literacy rate; proportion of graduates; proportion of population enrolled in technical courses; and infant mortality rate. In addition, we examine the percentage of the population in working age groups, and on the supply side, the number of institutions of higher education in the states.

The literacy rate can be expected to positively affect economic growth and per capita income in the states primarily because it is a measure of the knowledge and awareness of the population. Our assumption is that a higher literacy rate prepares one for higher skills, the ability to deal with higher technology, and the discretion to make rational choices. A more literate population is able to use its skills productively to generate more output and income.

The proportion of graduates and the proportion of those enrolled in technical courses also positively impact the per capita income because of their effects on creating a labour pool with certain skills. The proportion of graduates reflects the percentage of population that has attained a certain threshold level of education which equips them with certain skills needed for specific kinds of economic activity. Hence, an increase in the proportion of graduates can be expected to increase the workforce participation rate of the population and enable them to contribute to increased output and income. The proportion of technical manpower can bring about growth and has the potential to increase incomes since investors are usually attracted to a pre-existing pool of manpower with certain skills.

We may expect the percentage of population in working age groups to affect per capita income positively through their impact on output because only population in the working age groups is likely to contribute to output increases.[11]

Turning to health indicators, the infant mortality rate (IMR) across a state is an indicator of its progress on health. While this factor does not directly affect investment in the state, it can nevertheless be viewed as an indicator which reflects the economic capability of the workforce. Good health enhances the productivity of the population. The IMR indicates prenatal care, maternal care and the existence of child-care facilities, indicating maternal mortality, fertility rate and the death rate of the population. It indicates the stage of demographic transition the state is in. Our assumption and expectation is that a lower IMR of population implies that the state's population is healthy. Empirical studies have repeatedly brought out the finding that hospitalization is one of the most important reasons for indebtedness and abject poverty, especially in rural areas (see George, 2009). Hence, we assume that states with a lower IMR are healthier. A healthy population is capable of producing more output and income.

[11] The working age group is defined as the population in the age groups 15-59 years. Only for 1971 was data on population in the upper age limit not available; hence, we used population greater than 15 years as those being in the working age group. As this was the same problem for all the states, however, we do not expect their relative positions to change.

Indicators of Governance: Law and order

Governance refers to the functioning of governments and public institutions that impact on economic activities and the lives of citizens (Paul and Sridhar, 2009). When the processes of public decision-making and implementation of policies are carried out with credibility, transparency and accountability, governance is considered good. Given its complex nature and scope, however, it is far more difficult to define and measure governance than the other factors discussed above.

In this paper, governance has been equated with law and order. This was done because of the absence of data on other variables which reflect governance. As Paul and Sridhar (2009) point out, it is extremely difficult and challenging to come up with measures of governance that reflect the functioning of public institutions.

A sound law and order system is essential for economic and social progress. Based on open-ended discussions with senior police officials, we came up with two measures of governance or law and order: (a) police firing incidents per million population and (b) percentage of pending cases under trial in courts. We selected police firings per million population as an indicator of the law and order condition in a state because it signals the intensity of agitation between groups, and the ability or inability of the administration to bring them under control or a combination of both. Because police firings are widely and regularly reported, they can add to uncertainty in the minds of investors and can adversely impact the smooth functioning of a society and its economic activity.

Law and order may also be represented by events which capture the efficiency and effectiveness of the judiciary, such as the proportion of pending cases in the court.[12] One common measure that is chosen to reflect governance is corruption – the use of monetary or non-monetary bribes to have work done in government or public institutions. There are no reliable subnational data on these measures. However, the fact that other measures of governance have been used does not imply that corruption and other measures of governance have been ignored, as Paul and Sridhar (2009) point out. Good governance does manifest itself in law and order. For example, when law and order break down (as reflected in rising number of incidents of police firing), the public may be forced to resort to corruption. Similarly, when the public image of a place is that it is disorderly or when court cases take a long time to resolve (pending judicial cases), entrepreneurs will refrain from

[12] In order to arrive at these indicators, we had open-ended discussions with the Director-General of Police in Karnataka on the role that law and order play and how it impinges on the economic environment and economic growth in the state. He suggested that the number of incidents of police firing and the percentage of civil to armed police are good indicators which capture the public agitation mood in the state which impinges on their economic and investment environment.

investing in that state since they look for a stable environment and speedy redress of grievances in the event of disputes. Sound law and order is also essential for the retention of a skilled workforce. Hence, the measures we chose are reflective of public functioning and the governance of a state.

Specifically, we expect that the greater the police firing incidents per million population, the lower the per capita income would be. Similarly, the greater the percentage of cases pending trial, the lower would be the per capita income, for reasons discussed above.

We also examined SLL (cases reported under local and special laws) crimes. These refer to crimes committed under the Arms Act, Opium Act, Gambling Act, Excise Act, Prohibition Act, Explosives and Explosive Substances Act, Motor Vehicles Act, Prevention of Corruption Act, Customs Act, Indian Railways Act, and other offences. We have already demonstrated that corruption is reflected in the law and order situation. Similar is the case with crimes committed under the Explosives and Explosive Substances Act, which is likely to be reflected in police firing incidents. Most of the other SLL crimes noted above are private crimes and do not reflect the general law and order condition of the state. Furthermore, the reporting of many of these crimes is determined by the filing of a First Information Report (FIR). If no FIR is filed, then these crimes are not reflected in the data. However, since data on police firings and pending court cases are reported widely, we chose them to reflect governance and public functioning.

Thus the measures of law and order we choose reflect to a substantial degree the governance of a state. We consider our work pioneering in that we find that no other earlier studies (with a few exceptions as we noted) have examined non-economic factors, such as law and order and their impacts on the economic environment.

Measures of infrastructure

Why is infrastructure important for economic growth and investment? Infrastructure is an important enabler of economic growth. Electricity is required for manufacturing; telecommunications are necessary for reducing firms' transaction costs; good roads are required for transportation of inputs and connectivity to markets. Mani and others (1996) find that power availability rather than its price, reliable infrastructure and factors of production played significant roles in decisions regarding the location of firms across major Indian states. In line with this literature, our chosen measures of infrastructure or public services are (a) installed capacity for generating electricity and (b) penetration of telecommunications.

First, we take the instance of electricity – installed capacity in the states. While *electricity consumption* is concomitant with growth and may be expected to increase monotonically with growth, *installed capacity* is a precondition for growth. Installed capacity is critical for manufacturing processes and is necessary to increase output and raising per capita incomes.

Another measure of physical infrastructure we examine is the percentage of households with electricity. This indicates the extent to which electricity is extensively available in the state. However, given that the percentage of households with electricity could be correlated with the installed generating capacity in a state, we include only installed capacity in the estimation, although we present trends and disparities in the percentage of households with electricity connections across the northern and southern states.

Telecommunications are crucial for firms in reducing their transaction costs (see Norton, 1992; Roller and Waverman, 2001) and for increasing organizational efficiencies, output and per capita incomes. The literature conclusively shows that tele-density has positive impacts on growth. A number of researchers have hypothesized that telecommunication infrastructure lowers both the fixed costs of acquiring information and the variable costs of participating in markets (Norton, 1992). They point out that, as such infrastructure improves, transaction costs decline, and output increases for firms in various sectors of the economy. Sridhar (2007) found positive impacts of mobile and landline phones on national output when controlled for the effects of capital and labour.

Hence, we expect both installed capacity and tele-density to have positive effects on the economic environment in the states, especially for manufacturing, and positively impact per capita NSDP.

Indicators of resources

We choose per capita public (both capital and revenue) expenditure as an indicator of resources available to a state which could endogenously determine its per capita NSDP. This is because it is assumed that all public expenditure translates into output of goods and services, increasing per capita NSDP. This could be endogenous since rising public expenditure could be partly financed out of rising NSDP. However, we circumvent endogeneity by using the lagged form of this variable. While current year expenditure can be endogenous, per capita income in a current year cannot impact a previous year's expenditure.

Measures of urbanization

We use the percentage of urban population in a state as the measure of urbanization which we expect will impact per capita income. Urbanization is a causal factor underlying high per capita incomes because scale economies and agglomeration economies make it possible to accumulate output rapidly. How is urbanization defined in India's context? The Census of India defines settlements having the following characteristics as urban areas:

(a) A population of five thousand or more;

(b) A minimum density of 1,000 people per square mile;

(c) At least 75 per cent of workforce outside agriculture.

It should be mentioned that India's definition of urbanization is quite conservative when compared with that of China where all areas with a minimum of 10 per cent non-agricultural employment are classified as urban. As Cohen (2004) argues, if India were to reclassify its urban areas using a more liberal definition, a majority of India would be urban today. In fact, higher levels of urbanization also attract firms to locate, invest and create jobs due to urbanization economies and localization economies.

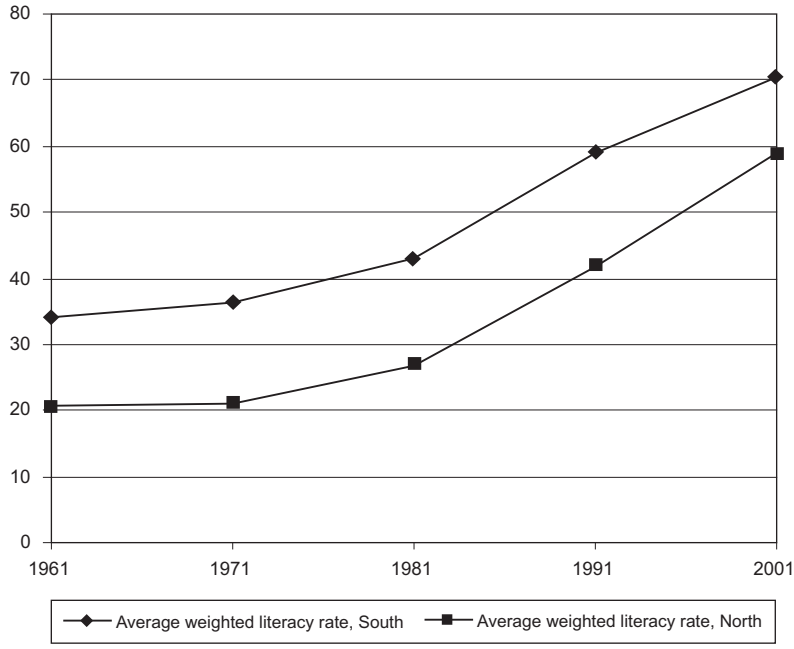
Trends in explanatory factors: Human capabilities

In this section, we review the trends and disparities in the explanatory factors. Figure 8 compares the average weighted (with population) literacy rate across the southern and northern states over time.

Figure 8 shows that the southern states' literacy rate has always been at a higher level when compared with that of their northern counterparts. Further, the rate of growth of literacy also has been occurring at the same rate in the two regions, with the result that the northern states' literacy rate has remained well below that of the south as of 2001. Despite its remarkable stability when compared with per capita NSDP (which is quite volatile, see figure 1), we surmise that the literacy rate may have been one of the preconditions necessary for economic growth to have taken off in the southern states.

In terms of examining trends in educational outcomes, we do not stop at the literacy rate. We compare the trends in the average proportion of graduates (or above) from 1971 to 2001 between the southern and northern states as yet another educational measure.

Figure 8. Trends in literacy rate, southern and northern Indian states



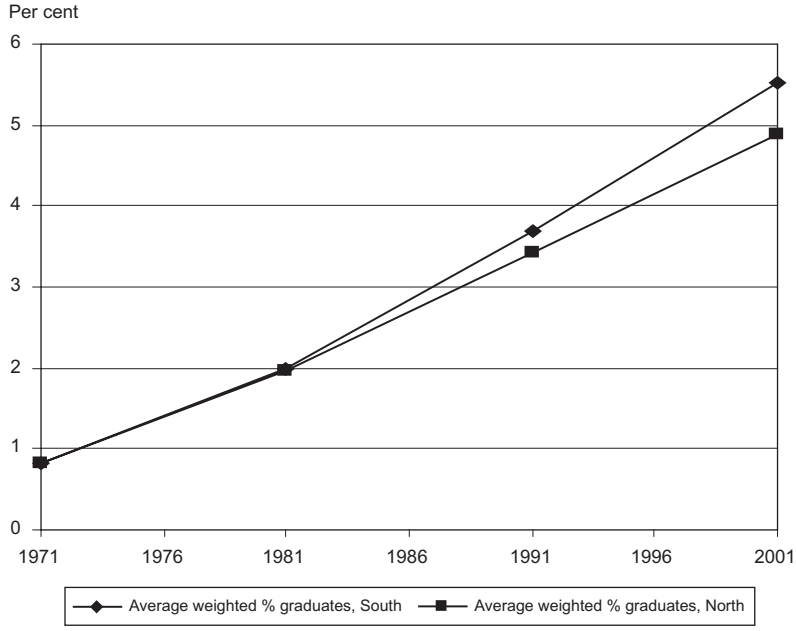
Source: Census of India and authors' computations.

Figure 9 compares the trend in the average weighted proportion of graduates during 1971 to 2001 for the southern and northern states separately.

The interesting finding here is that the northern states had on average the same proportion of graduates as the southern states, from 1971 to 1981. However, they gradually lost out to the southern states, from 1991 to 2001 (figure 9). Thus, we have more evidence here that the surge in the south is a more recent phenomenon, not historical.

Over and above general graduates, we made an attempt to examine the proportion of technical manpower in the two groups of states. Enrolment in and graduation with degrees in technical courses, such as B.E. (Bachelor's of Engineering), B.Sc. (Bachelor's in Science), B.Arch. (Bachelor's in Architecture), Medicine, Dentistry, Nursing, Pharmacy, Ayurvedic and Unani, B.Ed. (Bachelor's in Education), and B.T. (Bachelor's in Technology) have a role in the building of a skilled labour force. So we compared enrolment by year in (all the above) technical degree courses as a proportion of the population in the relevant age group (above 15 years)

Figure 9. Proportion of graduates, south and northern states, 1971-2001



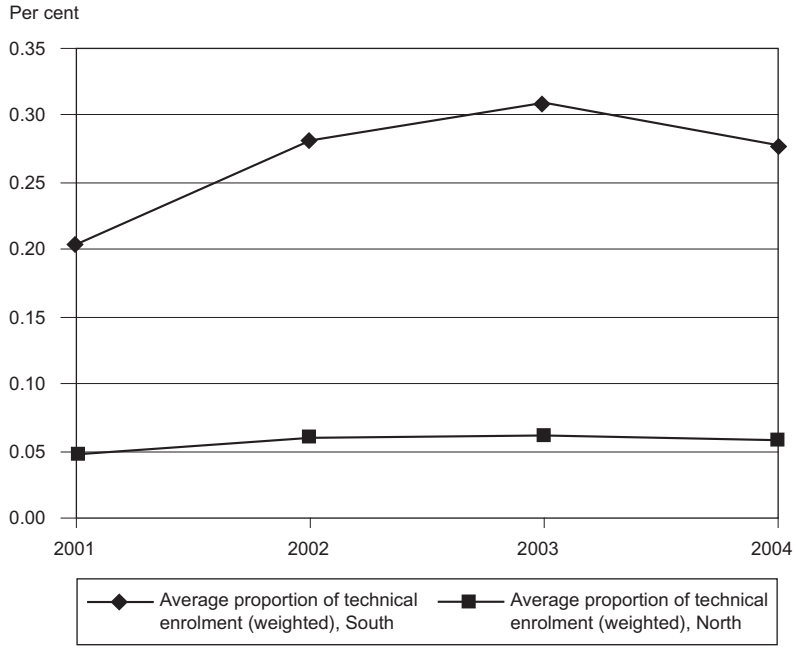
Source: Census of India and authors' computations.

to examine if the southern states have anything more of an edge compared with their northern counterparts (see figure 10).[13] Certainly, the southern states have a larger skilled and technical labour force when compared with the northern states for all the years of study.

All these measures of human capabilities and skills can be expected to impact not only the per capita income through their effect on skilled jobs, but also impact investment due to the existence of a pool of skills which impact firm location

[13] The methodology we used to arrive at the enrolment in these technical courses as a proportion of population above 15 years of age, from 2001 to 2005 is as follows: We took the age-wise distribution of population in 2001 from the 2001 Census for all the states. Then we assumed that the same age-wise distribution of population holds good for the period from 2002 to 2005. Since we had the state-wise populations during the period from 2002 to 2005, we applied the age distribution (of population above 15 years of age) of 2001 to obtain population above 15 for the non-Census year. Then we took the enrolment in the technical courses as a proportion of the population above 15 years of age. Next, we averaged this proportion for the southern states and the northern states (including Jharkhand, Uttaranchal and Chhattisgarh) separately. Although we tried, we were unable to obtain data for earlier years on this important indicator.

Figure 10. Enrolment in technical courses, south and northern states



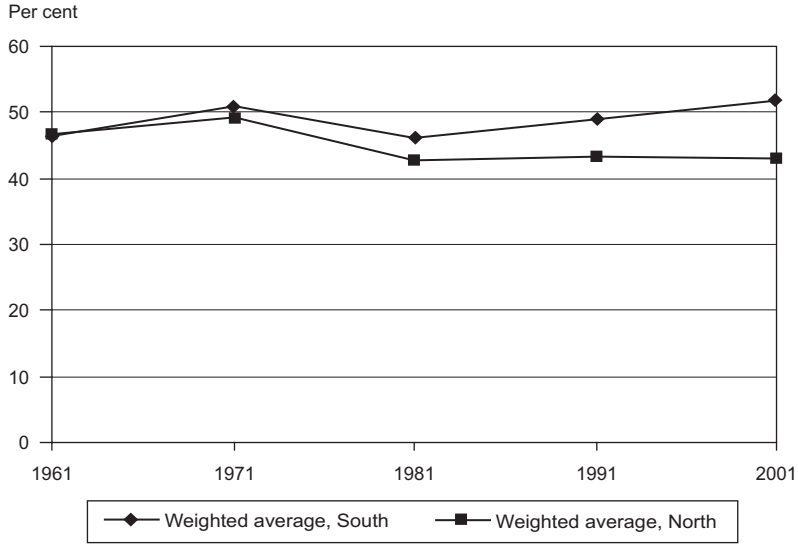
Source: Ministry of Human Resource Development, Government of India, and authors' computations.

decisions. In fact, it is plausible to believe that technology giants such as Infosys and WIPRO have located in Bangalore only because of the pre-existence of a large pool of skilled and technical workforce there. Paul and Sridhar (2009) report that the southern Indian state of Tamil Nadu had a total of over 540 engineering colleges in 2008 compared to only 11 colleges in the 1970s. They report that Uttar Pradesh, on the other hand, had less than half this number of engineering colleges despite having a head start in this arena in the nineteenth century.

On the labour market aspects, we examined the percentage of the population in the working age groups. Figure 11 presents the disparity across the northern and southern states in terms of their working age group population.

Figure 11 shows that, although the northern and southern states were the same as far as the percentage of population in working age group is concerned in 1961, there was a divergence after 1971, when there was a steady increase in the working age population in the southern states when compared with that of the north.

Figure 11. Population in working age groups, south and northern states



Source: Census of India, various years, and authors' computations.

This lends credence to the belief that this may have been a contributing factor to the rising incomes we observe in the south.[14]

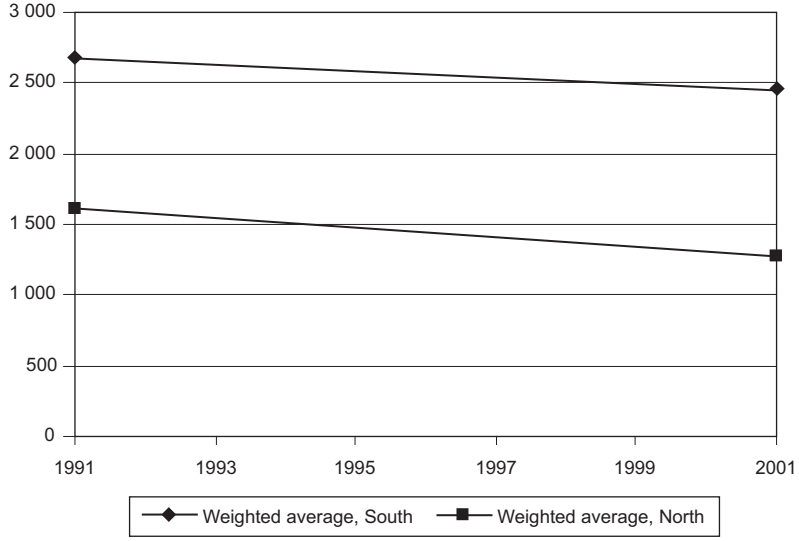
Finally, on the supply side of human resources, we examined the number of higher educational institutions in the northern and southern states. To obtain this information, we aggregated data on the number of colleges from the Census town directories.[15] The assumption is that only towns and cities contain institutions of higher education, which is reasonable. There is also no source which would contain this data for rural areas as well. Figure 12 presents these data for the northern and southern states.

Figure 12 shows that as with the other measures of human resources we observe, even with respect to higher educational institutions, the southern states have stolen a march over their northern counterparts. This must have created the

[14] We also obtained data on the man-days lost by state, but there was no reliable data on the number of man-days of employees or workers against which we could compare the man-days lost. Hence, this variable could not be used.

[15] Information on arts, science, commerce, engineering, medical and law colleges, vocational training institutes and polytechnics is included here.

Figure 12. Higher educational institutions, south and northern states



Source: Census of India town directories and authors' computations.

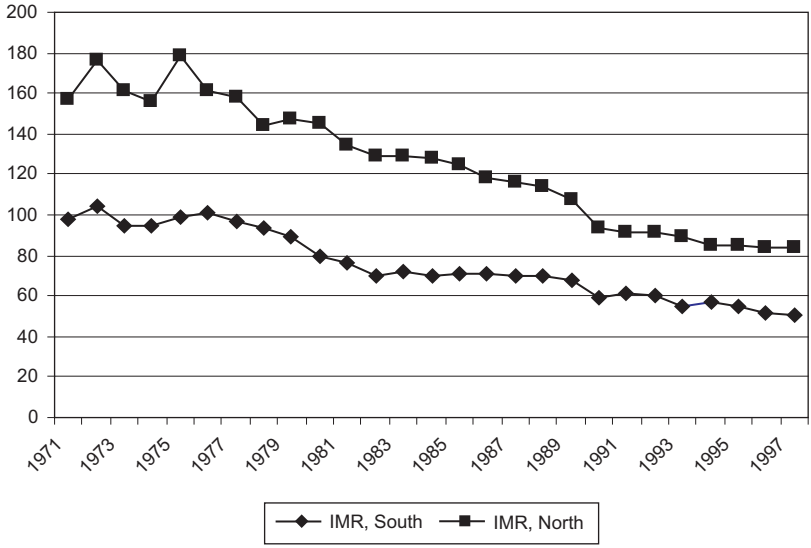
necessary institutional capacity to turn out a large pool of skilled labour responsible for increasing levels of output and income.

Thus, we find that in terms of educational outcomes measured in the literacy rate, proportion of graduates, enrolment in technical courses, proportion of population in the working age group and supply-side factors, such as the number of higher educational institutions, the southern states have an edge over the northern states during the entire period of our study.[16]

Figure 13 summarizes the selected health indicator of human capabilities – the infant mortality rate (IMR), weighted by population of the respective states. Figure 13, which summarizes the historical trend in the infant mortality rate across the southern and northern states, shows that the southern states (with their lower IMR) have always been better than their northern counterparts, consistent with our expectation. This implies better prenatal medical care and related facilities in the south, which implies a population with a much better health and productivity than in the north, although the IMR in the northern states has been declining post-1991.

[16] A caveat to note is that the mere existence of a large number of educational institutions in the southern region does not mean that enrolments consists only of people from the southern states or that the graduates of these institutions necessarily constitute the labour force for the industries in the south.

Figure 13. Infant mortality rate (IMR), southern and northern states



Source: Compendium of India's Fertility and Mortality Indicators, 1971-97, Registrar-General of India and Authors' Computations.

These trends in education and health, which are indicators of human capabilities and skills, strongly suggest that at least some of the southern states have had an advantage historically over their northern counterparts.

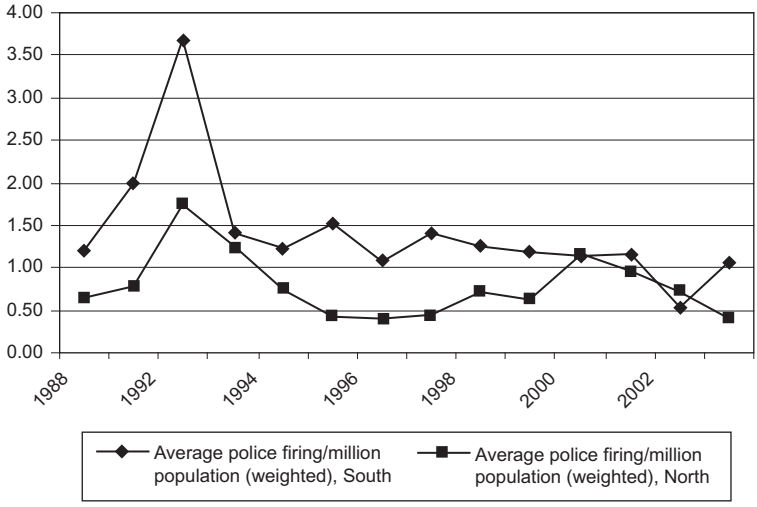
Trends and disparities in governance: northern and southern states

We have already discussed the indicators of governance – police firing incidents (per million population) and proportion of pending court cases under trial. An examination of trends in police firing incidents and the proportion of pending cases in court (filed under the Indian Penal Code) is very revealing when we look at these separately for the southern and northern states.

Figure 14 summarizes the trend in the average number of police firing incidents (per million population) separately for southern and northern states, weighted by their population.[17]

[17] For the northern states, since we are comparing the undivided states (Madhya Pradesh, Bihar and Uttar Pradesh) prior to 2000 with years beyond 2000 after the three new states were created, we have added the data for Chhattisgarh, Jharkhand and Uttaranchal post-2000 to ensure that we are comparing the same set of states.

Figure 14. Trends in the average number of police firing incidents per million population, south and northern states



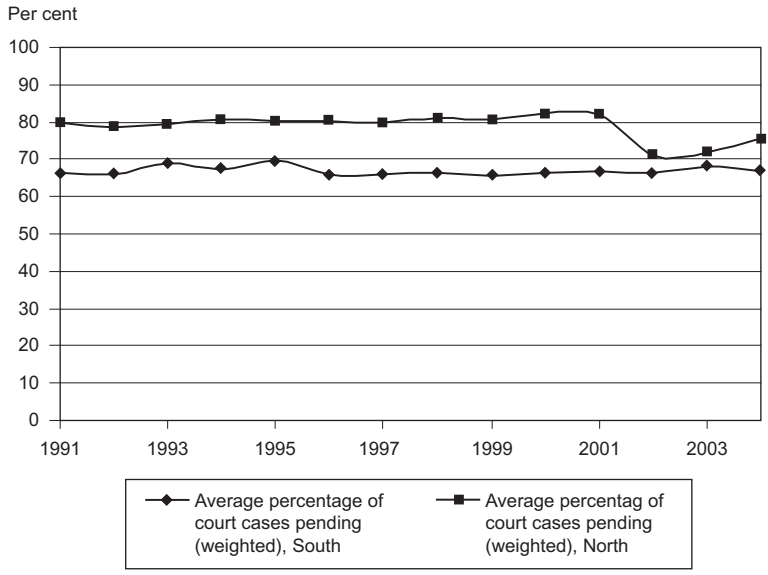
Source: National Crime Record Bureau and authors' computations.

During the 1990s, the south Indian states had relatively more incidences of police firing per million population when compared with that in the northern states. This is a surprising finding. After probing this, we found that such incidents in the south are dominated by Andhra Pradesh, which was characterized by frequent Naxalite disturbances (1987-2002) during which there was a sharp increase in the number of police firings. It should be noted that Andhra Pradesh, which is high on this score (law and order problems), is lowest on the per capita income front among the southern states (implied in chart 1, see Paul and Sridhar, 2009). By and large, if Andhra Pradesh were excluded, the number of police firing incidents in the southern states would always be lower than in the north. Paul and Sridhar (2009) also find evidence of this.

Next, we take the proportion of pending cases in courts in the two sets of states and examine their trends during 1991 to 2004. This is calculated as cases filed under the Indian Penal Code pending trial in the courts as a proportion of the total number of cases for trial including pending cases from previous years. Court cases should be viewed as a measure of public faith in the judiciary, and pending cases demonstrate its efficiency/inefficiency.

Figure 15, which compares the weighted (weighted by the population of the respective states) proportion of cases pending trial in courts, shows that the judiciary

Figure 15. Trends in proportion of cases pending trial in courts of northern and south Indian states



Source: National Crime Record Bureau and authors' computations.

in the northern Indian states is quite inefficient when compared with that in the southern Indian states, where on average the proportion of cases pending trial stood at only 67 per cent as of 2004, compared with 76 per cent in the northern states (including the three new states – Jharkhand, Chhattisgarh and Uttaranchal). It may be argued that cases may be pending because the number of cases registered is higher or the number of judges lower. If the number of judges is lower, it means the state is unable to recruit judges to increase its efficiency. This is yet another indicator which impacts the economic environment in these states and is very representative, since investors also look for speedy redress of grievances in the event of disputes.

We investigated the possibility of using other law and order measures such as the proportion of civil to total police force (consisting of civil and armed police). But since that is correlated with the number of police firing incidents, we decided to use the police firing incidents per 100,000 population. For instance, only when the number of police firing incidents is on the increase that we may expect armed police strength in a state to increase. Hence, we expect that the number police firing incidents coupled with the number of court cases – both ongoing and pending provide reasonably good measures of law and order.

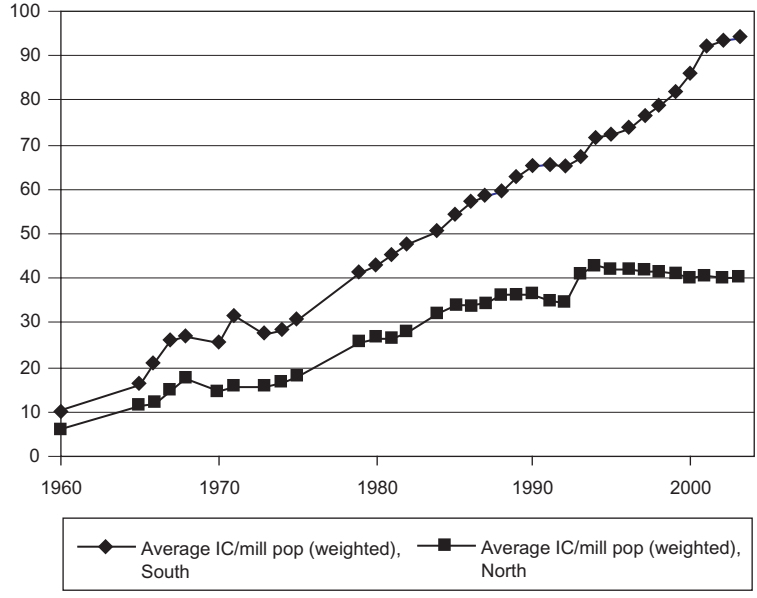
Summarizing, with the average weighted number of police firings (leaving out Andhra Pradesh which is the outlier) being lower in the south and with their high judicial efficiency (low proportion of cases pending trial), there is reason for us to believe that the southern states would offer a peaceful and stable environment, resulting in better economic and investment opportunities compared with their northern counterparts.

Trends in indicators of infrastructure

Our findings with respect to the infrastructure indicators – installed generating capacity, and tele-density are interesting. We find that the southern states are ahead of the northern states in these respects.

Figure 16 summarizes weighted (weighted by the respective states' population) installed capacity (thousands of kilowatts) per million population in the southern and northern states separately. These data series cover a reasonably long period of time. Not only was the installed capacity per million population always

Figure 16. Trends in installed capacity of electricity per million population: southern and northern states

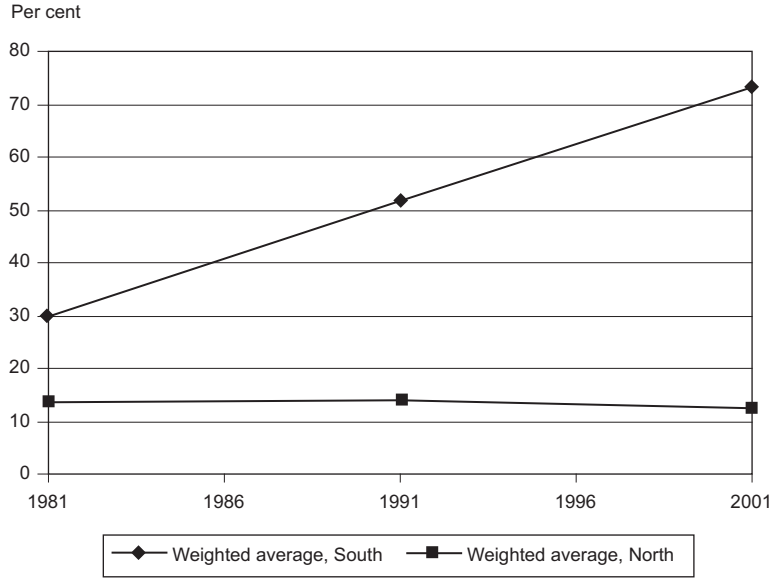


Source: Central Electricity Authority, Ministry of Power, Government of India, and authors' computations.

lower in the northern than in the southern states, but also there was a widening of these disparities between them from the mid-1980s.[18] The southern states experienced a continuous increase in their installed capacity after the 1990 liberalization whereas the northern states likely faced several constraints with regard to installed capacity expansion. Because of this, their average weighted installed capacity stagnated beginning from the mid-1980s. Thus, it is possible that a number of preconditions necessary for the existence of industry and services were getting ready in the southern states, which prepared them to take the plunge when the reforms of 1991 took place.

Another measure of physical infrastructure we examine is the percentage of households with electricity. This indicates the extent to which electricity is extensively available in the state. Figure 17 summarizes the weighted proportion of households in

Figure 17. Percentage of households with electricity, northern and southern states



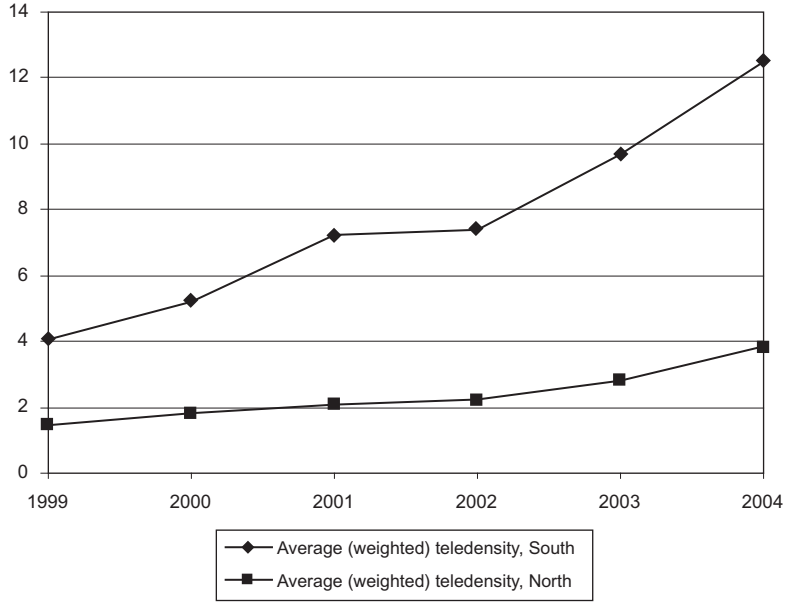
Source: Census of India, various years, and authors' computations.

[18] Here, as with other indicators, post-2000, we added the installed capacity for Chhattisgarh, Jharkhand and Uttaranchal to that for Madhya Pradesh, Bihar and Uttar Pradesh respectively, in all fairness to the northern states, since Chhattisgarh especially received many power plants after its separation from Madhya Pradesh. We have ensured, based on our discussions with the Central Electricity Authority, that it is possible for installed capacity to decline when old plants are retired or when plants are degraded.

the two groups of states and presents the trends over time. This figure shows that the southern states clearly have a lead in the percentage of households with electricity for all the years of our study. This implies that the southern states' physical infrastructure was much better when compared with that of the northern states. This prepared the southern states to grow rapidly when the liberalization of 1991 took place. The northern, states with their low level equilibrium with regard to the electricity infrastructure, were not prepared, and therefore lagged behind even when the reforms of 1991 took place.

Another measure of infrastructure we looked at relates to tele-density – the number of fixed land lines and mobile phones per 100 population for the southern and northern states. Figure 18 presents weighted tele-density (weighted with the states' population) for the two sets of states. As with electricity, tele-density for the southern states on average is not only much higher than that for the northern states for the limited period (1999-2004) over which we observe this, but it also increased at a much higher rate in the south than in the northern states over this period.

Figure 18. Trends in tele-density: southern and northern states



Source: Department of Telecommunications, Government of India.

Recall that we have defined tele-density to consist both of land lines and mobile telephones. Given land lines are mostly offered by government operators (such as Bharat Sanchar Nigam Limited, Mahanagar Telephone Nigam Limited and so on), there is not much of a difference in penetration between the southern and northern states there.[19] The differences in total telephone penetration across the northern and southern states could be attributed to the extent of mobile telephone penetration, which is much higher in the southern states. This is primarily due to the competition prevalent in the mobile telephony sector (see Sridhar, 2007) which is much greater in the southern than in the northern states.

We made an attempt to examine the road length in the northern and southern states. We did obtain data on this from the CMIE, but found that the road length declined during some years in most of the states. This suggests that there were changes in road classification which were not captured by this database and hence are not reported here.

In summary, all infrastructure indicators including installed capacity (electricity), percentage of households with electricity and tele-density, show clear advantage for the southern states and steep disparities between the northern and the southern states over a reasonably long period of time. This disparity continues to widen even today. This strongly suggests that the southern states had all the preconditions necessary for growth and were ready to take the plunge when the reforms of 1991 took place. However, the northern states, with their poor infrastructure and pre-conditions, were simply not ready to take advantage of the opportunities when economic liberalization started to take place in the country.

Trends in resource utilization

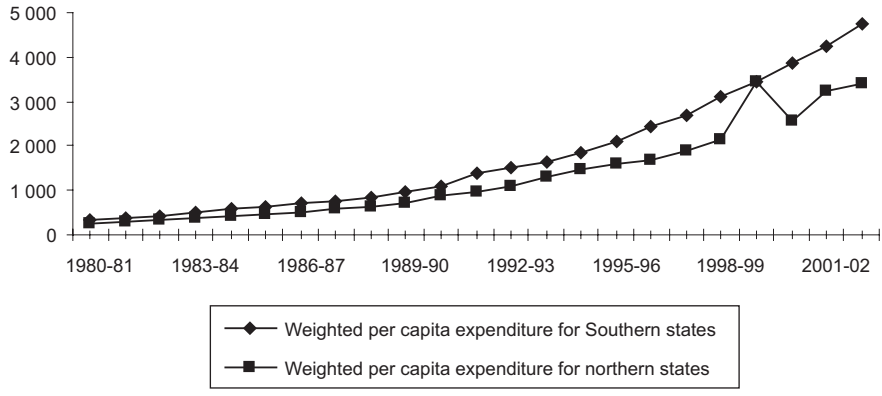
The efficiency with which resources are utilized has impact on economic growth. If resources are used in a manner that maximizes the useful goods and services derived from those resources, then we may expect greater economic growth to occur. The "doing more with less" slogan indicates the focus on *more* outputs with *fewer* impacts (fewer resources). While we focus on outputs with fewer resources, we are unable to examine other resource utilization impacts, such as that on the condition of the poor (relating to equity), due to data limitations.

[19] The three new states created in 2000 (namely Chhattisgarh, Jharkhand and Uttaranchal) are still treated as part of the circles of their parent states, with the result that pre-2000 and post-2000, we are comparing the same states.

Some measures of resources and their utilization would be public expenditures. We examined the trend in total expenditures[20] (consisting of both developmental and revenue expenditure) on various social sectors (such as education and public health) which are inputs.

Figure 19 summarizes the average total (developmental and non-developmental) per capita expenditure of the southern states (weighted with population), and that of the northern counterparts. The record of the southern and northern states in terms of spending (summarized in figure 19) indicates that the southern states took a leap forward in their developmental expenditures post-1991 compared with their northern counterparts. However, the fact that the southern states did not always have this advantage may be seen by the fact that, in the 1980s, the northern states' per capita expenditure was more or less the same as that of the southern states. Ghate and Wright (2008) found that revenue expenditure by the V states was lower than by their non-V states.

Figure 19. Total per capita expenditure, south and northern states



Source: Economic and Political Weekly Research Foundation (EPWRF) and authors' computations.

Next, we review the sectoral expenditure for the southern and northern states. When we examine such sectors as education and health, it is important to take into account total expenditures rather than merely capital expenditures. Much of the education and health outcomes depend upon the number of teachers and health workers and in respect of these items current/revenue expenditures constitute more than 80 per cent of the total expenditure. Thus, we compared total expenditures on

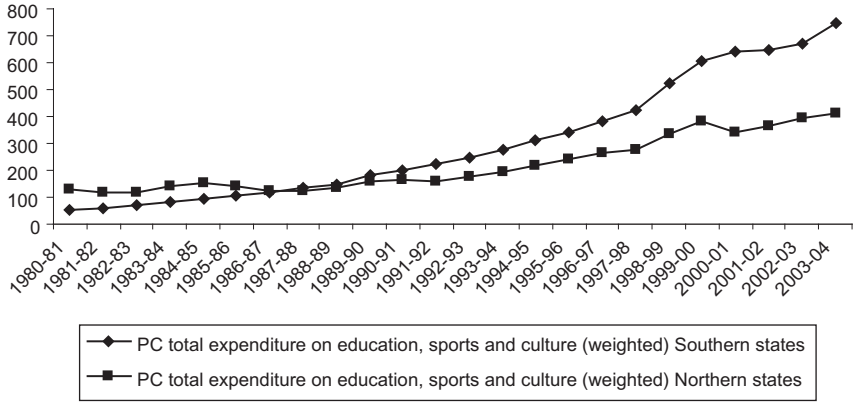
[20] This includes developmental expenditure incurred on the capital and the revenue accounts.

sectors such as education and health with respective outcomes, such as the literacy rate, proportion of graduates, enrolment in technical courses, and infant mortality rate.

Figure 20 summarizes over time the average per capita (total) expenditure on education, sports and culture by the southern and northern states.[21] While we did not have this data disaggregated separately for education, sports and culture, we surmise that the expenditure on education must account for a major part of this expenditure. Having noted this, figure 20 shows that the southern states spent less on education than the northern states during the 1980s. It was only after 1990 that the southern states' spending on education, sports and culture started diverging from that of the northern states.[22]

It is not clear if the increased spending is a sign of inefficiency or indicates better outcomes. To assess this, we compared this expenditure on education to relevant outcomes in the southern and northern states. The foremost of educational outcomes is the literacy rate, which we have compared for the southern and northern

Figure 20. Trends in total per capita expenditure on education, sports and culture, south and northern states



Source: Economic and Political Weekly Research Foundation (EPWRF) and authors' computations.

[21] In the case of education and health, the total expenditure was developmental expenditure on the capital and revenue account. There was no non-developmental expenditure reported.

[22] It must be mentioned that, as with the other indicators, for the northern set of states, we have included post-2000 data for the three newly created states – Jharkhand, Chhattisgarh and Uttaranchal, – so that the pre-2000 and post-2000 data are comparable.

states in figure 5. That figure clearly shows that the south has been well ahead of the north historically in terms of the level and progress of the literacy rate. This means that the per capita expenditures on education are either not completely reflected in the literacy rate, or the southern states are more efficient (recall from figure 20 that their spending on this sector during the 1980s had been lower than that of the northern states) when compared with their northern counterparts as far as the outcomes are concerned.

We have also compared the trends in the average proportion of graduates (or above) during 1971 to 2001 between the southern and northern states as yet another educational outcome (see figure 9). We found that the surge of the south is a more recent phenomenon, rather than historical (recall that initially the southern and northern states had the same proportion of graduates until 1981). Even when we compared enrolment in technical courses, we found that the southern states have a higher proportion of technical labour when compared with the northern states for all the years of study (figure 10).

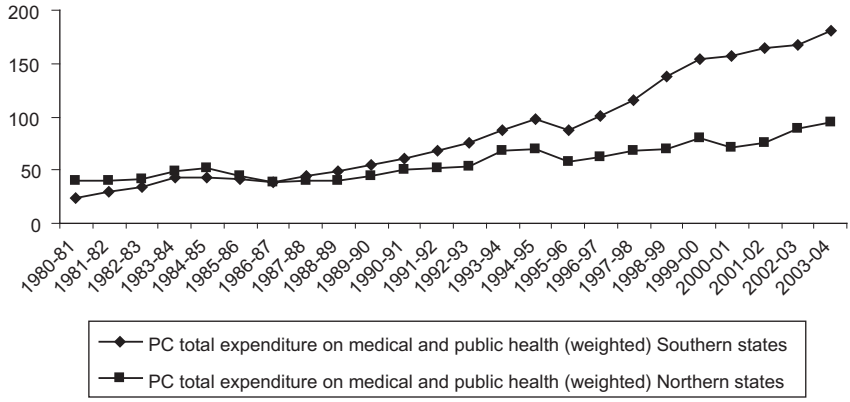
Thus, educational outcomes measured in terms of the literacy rate, proportion of graduates (post-1981), and the enrolment in technical courses, show that the southern states have maintained an edge over the northern states. This is so despite the fact that their spending on education has not been always higher than that of the northern states (figure 20, see the decade of the 1980s). Thus it must be the case that the southern states' expenditures on education are efficiently spent compared with those of the northern states.

Next, we examined per capita expenditures by the states on public health and medical facilities.[23] Figure 21 summarizes the trends in per capita spending on public health and medical facilities in the south and northern states. Figure 21 shows considerable variability in the per capita expenditures on public health and medical facilities across the two set of states, with the spending of the southern states diverging from that of the northern states beginning from the late 1980s.

We have already reviewed the outcomes of health spending – manifested in the infant mortality rate, which is lower for the southern states (see figure 13). Given that the southern states' spending on public health was clearly lower than that of the northern states during the decade of the 1980s, but its health outcomes, such as IMR, were clearly better always, it must be the case that the quality of spending in the south is much better than in the northern states even as it relates to public health.

[23] As with the other indicators, for the northern set of states, we have included post-2000 data for the three newly created states – Jharkhand, Chhattisgarh and Uttaranchal, – so that the pre-2000 and post-2000 data are comparable.

Figure 21. Per capita expenditure on public health, south and northern states



Source: Economic and Political Weekly Research Foundation (EPWRF) and authors' computations.

Summarizing, when we compare spending on education and health with their outcomes across the two groups of states, we find the south is relatively more efficient as it is able to ensure better outcomes than the northern states with its lower record of spending on these sectors during the 1980s.

In order to compare the expenditure on roads and bridges by the southern and northern states, we did not have reliable data on significant outcomes (road length) to enable us to make an assessment of this component of public spending.[24] We also had data related to spending on energy, which could have been easily compared with the outcome on installed capacity generated, but the data on energy were not complete.[25]

[24] We found in the case of some states that road length actually declined in some years, which is not plausible except in the event of a reclassification of roads. Further, we found that the data on road length from the Centre for Monitoring Indian Economy (CMIE) was disaggregated by various types of roads, such as surfaced national highways, surfaced state highways, district roads, panchayat roads, urban roads, project roads and so forth. But the length of different types of roads did not add up to the total road length reported. We attempted to contact CMIE regarding this, but did not obtain a satisfactory response.

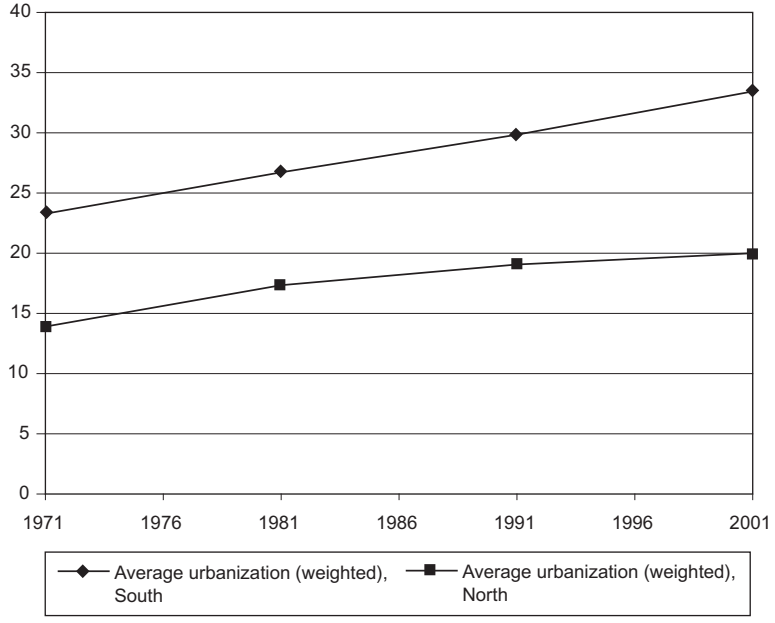
[25] We found negative values in the developmental expenditure on energy in the case of both the southern and northern states. Based on our discussions with the EPWRF, the actual developmental expenditure on energy is worked as follows: if the actual expenditure is Rs 100,000,000 during any given year and the receipts were Rs 116,000,000, then the -16,000,000 appears as deficit. The problem with using these data is that they do not indicate what was spent, but only the deficit.

While in this section, we have compared the public expenditure on social sectors with their outcomes to assess the efficiency of spending, in the regression, we use total public expenditure per capita (lagged) as an explanatory variable.

Disparities in Urbanization

Given the importance of urbanization in increasing aggregate productivity and incomes, what do we observe with respect to the urbanization pattern of the southern states versus the northern states? Figure 22 shows that the southern states are way above the northern states in terms of the percentage of urbanization (weighted with population) since 1971. This indicates that the southern states experienced agglomeration and scale economies in production throughout the period, which must have contributed to increased aggregate output and their higher per capita incomes.

Figure 22. Trends in urbanization, south and northern states, 1971-2001



Source: Census of India and authors' computations.

VI. SUMMARY OF FINDINGS AND IMPLICATIONS

The important question examined by this paper is: Why have some Indian states grown faster than others? While our hypothesis was that, with the relative growth of manufacturing, the southern states may be growing faster than the northern Indian states, which have more comparative advantage in agriculture, we find that the *service sector* has led the surge in growth in the southern states (taking the example of Tamil Nadu). The additional purpose of the exposition in the previous sections of this paper has been to examine whether factors, such as human capabilities, skills and awareness, infrastructure, governance, urbanization and resource utilization shed light on the divergent paths of per capita income growth, divergent trends in poverty reduction, and disparities in FDI inflows and domestic investment observed across the southern and northern states.

What do we gather from the analysis of disparities in these factors between the southern and northern states? It is possible that differences in the underlying and relatively more stable conditions such as literacy rate, and infant mortality rate in the two set of states could at least in part account for the divergence in per capita income and poverty reduction although there could be some simultaneity there. Our premise is that the marked upward shift in per capita income and the subsequent reduction in poverty that the southern states experienced since the early 1990s can be attributed to the flow of substantial investments into these states. We find that, from 1995 to 2003, the southern states attracted private investment worth Rs 4.74 trillion when compared with an average of only Rs 1.7 trillion during the same period for the northern states. Based on our research and analysis, we surmise that disparities in governance, educational outcomes, urbanization, infrastructure and resource utilization could account for disparities in investment flows across the southern and northern states.

A limitation is that this paper provides more descriptive and qualitative analysis than quantitative analysis. Therefore, policy conclusions need to be read with caution. Being aware that we may not have taken into account some factors that could have contributed to the outcomes studied here (for instance, Paul and Sridhar (2009) discuss the impact of social movements and caste on education in the case of Tamil Nadu), the following specific findings from our analysis are worth noting:

(a) With respect to most of the factors representing human capabilities – literacy, infant mortality, stock of graduates, enrolment in technical courses, and proportion of population in working age group, supply-side factors, such as the number of institutions of higher education, and infrastructure, such as installed capacity, percentage of households with electricity and telephone penetration, the southern

states had certainly an advantage over the northern states. We have to note that technical manpower (indicated by enrolment in technical courses), in which the southern states appear to have a lead, signals a critical resource that modern industries and the service sector need. Unfortunately, data on this was not available for a reasonably long time period for us to include it in the regression. Given this limitation, we surmise that the supply of this factor must have played a key role in the transformation that the south experienced from the mid-1990s;

(b) In terms of factors indicating law and order, such as the proportion of cases pending trial in courts, the southern states have an edge over their northern counterparts. With the exception of Andhra Pradesh, the number of police firing incidents was lower in the southern than in the northern states. Based on this, we surmise that the potential (measured in terms of the initial conditions) for economic growth existed more in the south than in the north;

(c) With respect to total per capita spending and per capita spending on education and public health, while the southern states spent less than the northern states during the 1980s, they spent more than the northern states post-1991, presumably implying a greater level and quality of public services.

We thus find that while the southern states had an edge with regard to the initial conditions of several factors that we have taken into account, it did not have an initial advantage in all of them (police firing (when AP is included), the stock of graduates and the proportion of population in the working age group in which the south and the north started off at the same point in 1961).

A surprising finding is also that, while the southern states' average weighted per capita NSDP was nearly twice that of the northern states in 2004, the growth rate of weighted per capita income was on average higher in the northern states (2.2 per cent) than that in the south (which was 1.78 per cent) during the period from 1960 to 1991. However, during 1992 to 2004, the average growth rate of weighted per capita NSDP in the southern states was 4.6 per cent compared with only 1.62 per cent in the northern states. This shows that the surge in the south is indeed a recent, post-1991 phenomenon.

For an explanation of the intriguing phenomenon of the sudden growth of southern states in the 1990s, we turn to major policy changes that were occurring in the Indian economy since the mid-1980s, when the first steps towards decontrol and liberalization occurred in India (see Joshi and Little, 1997; Rodrik and Subramanian,

2005). This is also consistent with what the earlier literature (for example, Mathur, 2001; Basu, 2004) finds. De-licensing of industries and more liberal policies towards foreign investment were adopted during this period. In 1991, the full-fledged economic liberalization further enabled the opening up of the Indian economy, which created favourable conditions for private sector investment, both domestic and foreign. These policy changes were exogenous and national, with all the states being free to take advantage of the opportunities it offered. So states that were more prepared (in terms of governance and infrastructure) to take the plunge forward succeeded, whereas the states that were less prepared in these terms could not do so. Ahluwalia (2000) also highlights how the economic liberalization reduced the degree of control exercised by the centre in many areas, leaving much greater scope for state-level initiatives, which is particularly true as far as attracting investment, both domestic and foreign, is concerned. Ahluwalia concludes that state-level performance and policies therefore deserve much closer attention than they receive. It is particularly important to study the differences in performance among states in order to extract lessons about what works and what does not. A better understanding of the reasons for the superior performance of some states would help to spread success from one part of the country to another.

Overall, the upward shift in per capita income, downward trend in poverty reduction and much greater investment flows that occurred in the southern states relative to that in the northern states can be explained partly by the advantage the former had in terms of human capabilities, infrastructure, urbanization and some (not all) law and order indicators and partly by the economic liberalization of 1991.

DATA APPENDIX

Data on investments are from the Centre for Monitoring Indian Economy (CMIE) data set CAPEX. Data sources for education/health and urbanization indicators are the Census of India. Historical data on infant mortality rate are obtained from the publication, *Sample Registration System: Statistical Report 2006,* published by Census of India. SDP data are from the Central Statistical Organization (or the Economic and Political Weekly Research Foundation (EPWRF). Poverty data are from the Planning Commission. Law and order indicators, such as the number of police firing incidents, proportion of pending court cases, are from the National Crime Record Bureau. Infrastructure measures, such as installed electrical capacity, are from the Central Electricity Authority, Ministry of Power, Government of India. Data on percentage of households with electricity by state are from the Census of India. Data on telephone penetration are from the Department of Telecommunications (DoT), Ministry of Information Technology and Communications, Government of India. Data on total and developmental expenditures by sector (education, sports and culture (and that on energy, roads and bridges not reported for various reasons discussed in the paper), public health and medical facilities are from the EPW Research Foundation. Literacy rates, proportion graduate and percentage of working age group for all states by year are from the Census of India. Data on the proportion of technical degree holders are from the Ministry of Human Resources Development's publication, *Selected Educational Statistics.* Annual time series data on the population in various states are from the EPWRF. Data on urbanization are from the Census of India. Data on higher educational institutions are aggregated at the state level from the Census of India town directories for towns and cities in the respective states.

REFERENCES

Ashraf, Quamrul H., Ashley Lester and David N. Weil (2008). "When does improving health raise GDP?", *NBER Working Paper* No. 14449, October.

Balakrishnan, Pulapre and M. Parameswaran (2007). "Understanding economic growth in India: A prerequisite", *Economic and Political Weekly*, 14 July, pp. 2915-2922.

Banerjee, Abhijit and L. Iyer (2005). "History, institutions, and economic performance: The legacy of colonial land tenure systems in India", *American Economic Review*, vol. 95, No. 4, September, pp. 1190-1213.

Basu, Sudip Ranjan (2004). "Economic growth, well-being and governance under economic reforms: Evidence from Indian States", *HEI Working Paper* No: 05/2004, The Graduate Institute of International Studies (Geneva).

Besley, Timothy J. and Robin Burgess (2000). "Land reform, poverty reduction and growth: Evidence from India", *Quarterly Journal of Economics*, vol. 115, No. 2, pp. 389-430.

Chaudhuri, S. (2000). "Economic growth in the State – Four Decades – I", *Money and Finance,* October-December, pp. 45-69.

Cohen, Barney (2004). "Urban growth in developing countries: A review of current trends and a caution regarding existing forecasts", *World Development* vol. 32, No.1, pp. 23-51.

Datt, Gaurav and Martin Ravallion (1998). "Why have some Indian states done better than others at reducing rural poverty? *Economica* vol. 65, Issue 257, February, pp. 17-38.

Das, S.K. and A. Barua (1995). "Regional inequalities, economic growth and liberalisation: A study of the Indian economy", *Journal of Development Studies,* vol. 32, No. 3, pp. 364-390.

Dholakia, R.H. (1994). "Spatial dimension of acceleration of economic growth in India", *Economic and Political Weekly,* 27 August , pp. 2303-2309.

Dreze, Jean and Amartya Sen (1997). *Indian Development: Selected Regional Perspectives*. (Oxford: Clarendon Press).

Fan, Shenggen, Peter Hazell, and Sukhadeo Thorat (2000). "Government spending', growth and poverty in rural India", *American Journal of Agricultural Economics* vol. 82, No. 4, November, pp. 1038-1051.

George, Benny (2009). "Sanitation programmes: A glass half-full", *Economic and Political Weekly,* 21 February, pp. 65-67.

Ghate, Chetan and Steven Wright (2008). "The 'V-Factor': Distribution, timing and correlates of the great Indian growth turnaround, Unpublished paper, accessed from http://www.isid.ac.in/~cghate/vfactor_final.pdf.

Ghosh, Madhusudan (2006). "Economic growth and human development in Indian States", *Economic and Political Weekly,* 29 July, pp. 3321-3329.

Guha, R., Southern Exceptionalism, Outlook.

Hausmann, R., Lant Pritchett and Dani Rodrik (2005). "Growth accelerations", *Journal of Economic Growth,* vol. 10, pp. 303-329.

Joshi, Vijay and I.M.D. Little. (1997). *India's Economic Reforms: 1991-2001* (Delhi: Oxford University Press).

Krishna, K.L. (2004). "Patterns and determinants of economic growth in Indian states", ICRIER Working Paper No. 144, September.

Kurian, N.J. (2000). "Widening regional disparities in India: Some indicators, *Economic and Political Weekly,* 12 February, pp. 538-550.

Mani, M., S. Pargal and M. Huq (1996). "Does environmental regulation matter? Determinants of the location of new manufacturing plants in India in 1994", *World Bank Working Paper* 1718, (Washington, D.C., World Bank).

Mathur, A. (2001). "National and regional growth performance in the Indian economy: A sectoral analysis", paper presented at the National Seminar on Economic Reforms and Employment in Indian Economy, IAMR.

Nagaraj, R., A. Varoudakis and M.A. Veganzones (2000). "Long-run growth trends and convergence across Indian states", *Journal of International Development,* vol. 12.

Nair, K.R.G. (1982), *Regional Experience in a Developing Economy,* (New Delhi: Wiley Eastern).

Norton, S.W. (1992). "Transaction costs, telecommunications, and the microeconomics of macroeconomic growth. *Economic Development and Cultural Change,* vol. 41, No. 1, pp. 175-196.

Nunn, Nathan (2009). "The importance of history for economic development", *NBER Working Paper* No. 14899, April, available at www.nber.org/papers/w14899, accessed on 29 June 2009.

Olson, Mancur (1984), *Rise and Decline of Nations* (New Haven, Yale University).

Paul, Samuel and Kala S. Sridhar (2009). "The paradox of India's North-South divide", Unpublished mimeo, May, Public Affairs Centre, Bangalore.

Rao, M. Govinda, R.T. Shand and K.P. Kalirajan (1999). "Convergence of incomes across Indian states: A divergent view", *Economic and Political Weekly,* 27 March 27, pp. 769-778.

Rao, Govinda M. and N. Singh (2005). *Political Economy of Federalism in India* (New Delhi, Oxford University Press).

Rodrik, Dani and Arvind Subramanian (2005). "From Hindu growth to productivity surge: The mystery of the Indian growth transition", *IMF Staff Papers*, vol. 52, No. 2, (Washington, D.C., IMF).

Roller, L.H. and Leonard Waverman (2001). "Telecommunications infrastructure and economic development: A simultaneous approach" *American Economic Review* vol. 91, No. 4, pp. 909-923.

Roy Choudhury, U.D. (1993). "Interstate variations in economic development and standard of living", (New Delhi, National Institute of Public Finance and Policy).

Sachs, J.D., N. Bajpai and A. Ramiah (2002). "Geography and regional growth", *The Hindu*, 25-26 February.

Shand, R. and S. Bhide (2000). "Sources of economic growth: Regional dimensions of reforms", *Economic and Political Weekly,* 24 October, pp. 3747-3757.

Sridhar, V. (2007). **"**Growth of mobile services across regions of India," *Journal of Scientific and Industrial Research,* vol. 66, April, pp. 281-289.

Virmani, Arvind (2006). "India's economic growth history: fluctuations, trends, breakpoints, and phases", *Indian Economic Review*, vol. 41, No. 1, pp. 81-103.

Wallack, J. (2003). "Structural breaks in Indian macroeconomic data", *Economic and Political Weekly*, 11 October.