Chapter II

Review

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INTRODUCTION

Many studies have attempted to link aggregate infrastructure spending to growth of gross domestic product (GDP) by using time series analysis and show a high return on infrastructure investment. Some studies also use cross sectional data to link economic growth and infrastructure variables and positively and significantly correlated with growth in developing countries.

Starting with MOHRING AND HARWITZ (1962) study which shows that public investment must be increased. They says that the financial viability of a public infrastructure facility under optimal pricing and investment depends upon its costs are jointly characterized by constant returns to scale, then the facility's revenue form marginal cost pricing will fully cover its capital and operating costs. If costs are characterized by decreasing returns to scale, marginal cost pricing will provide excess revenue, conversely if costs are characterized by increasing returns to scale, then marginal cost pricing will not cover costs.

P. C. SARKER (1989) explained that regional imbalances are to a large extent built in due to unequal natural endowments and lack, of infrastructure facilities which form the basis for rapid economic growth. The deficiencies and inadequacies in the development polices of the government might have also aggravated the already existing economic disparities over the years.

An attempt has been made by him in an article entitled – “Measurement of Imbalances in Regional Development in India” Graphical Approach”, to study the regional imbalances prevailing in the major states of Indian Union on the basis of more comprehensive set of indicators such as percentage of urban population.
and percentage of population below poverty line apart from indicators pertaining to agriculture, industry etc. This is done in a more rigorous manner through there graphical procedures involving the use of advanced statistical techniques for presenting multivariate data. The three graphical approaches are – (i) Dendrogram, (ii) Two-dimensional representation of first two factors of principal components and (iii) Biplot based on cluster analysis, principal components analysis and singular Value Decomposition Method, respectively.

Despite the several measures taken by the government and the policy thrust towards development of backward regions of the country on apriority basis, still there are considerable disparities prevailing in the different states of the country and seen within different parts of developed states. It is, therefore, necessary to monitor the efforts for reduction in imbalances over the period so that resources can be diverted to still backward states and backward pockets in developed states.

This study has clearly brought out the various implications of development of states through a well structure broad based analysis of selected criteria for development. Through the three types different to some extent in their ranking of states, the overall classifications of states. The analysis has also brought out the relative strength of states in various indicators which again broadly was in line with similar conclusions emerging from other studies also.

First, they use a capital stock estimate instead of simply using the expenditure. Second, they construct a simple model of both the effects of local public infrastructure on personal income and the effect of personal income on the allocation of local public outlays.

Results derived from annual data for 28 metropolitan areas from 1980 through 1984 reveal that public capital stock has positive and statistically significant effects on per capita personal income. The first is through the actual construction of the public capital stock. The second effect comes through public capital stock as an unpaid factor in the production process and consumption good of households.

Recent studies have concluded the nation’s public infrastructure is in serious disrepair. Public capital stock is shown to be an important input into the regional production process, which has long run consequences for enhancing a region’s productivity, and thus, its competitive advantage. Therefore well maintained public infrastructure should be an important component of any policy package designed to promote regional economic development.

WILLIAM F. FOX AND TIM R. SMITH (1990) jointly presented an analysis in this they discussed the relationship between public infrastructure policy and economic development. The article concluded the infrastructure cannot be expected to stimulate the economies of all communities, but most communities can benefit from exploring new ways to deliver infrastructure services. This article shows the slowdown in state and local spending on infrastructure. It discusses how the linkage between public infrastructure and economic development
depends on the individual location in question. It also discusses some options available to state and local officials who wish to deliver infrastructure services more efficiently.

There is less agreement about whether infrastructure can be used as a tool to stimulate economic development in individual locations. Understanding the linkage between infrastructure and economic development, might aid local policy makers in developing a better infrastructure policy for their community. Such understanding might help state policy makers determine which location within their state will benefit most from additional expenditure on infrastructure.

In this study a useful method is suggested to determine whether infrastructure will contribute to economic development or not. It is to consider the economic characteristics of the region in question. Regions can be classified into three categories - intermediate, congested and lagging - according to their current level of development the presence of ingredients for further development.

CLIFFORD WINSTON (1991) in an article describes that efficient infrastructure policy maximizes the difference between social benefits and the costs of use, including the costs that users impose on others, by specifying pricing guidelines to regulate demand and investment guidelines to specify design. He presents a mathematical derivation of these guidelines. In his article he offers a different perspective on paying for and investing in the transportation infrastructure.

Suppose public funds are used to widen the road and to repave it. Benefits will immediately flow from this investment in the form of lower travel time and less vehicle damage.
In a study ALICIA H. MUNNELL (1992) points out that everyone agrees that public capital investment can expand the productivity capacity of an area, both by increasing resources and by enhancing the productivity of existing resources. To obtain more evidence, he looked at the relationship between public capital and measures of economic activity at the state level. Since no data on state level public or private capital stocks were available, the first step was to construct stock estimates; these estimates were then used in three separate exercises. The first, parallel to the national work, estimated production functions for states and found that public capital had a significant, positive impact on output, although the output elasticity was roughly one half the size of the national estimate.

The second analysis examined the relationship between public and private investment, which is characterized by two opposing forces. On one hand, public capital enhances the productivity of private capital, raising its rate of return and encouraging more investment. On the other hand, from the inventor's perspective, public capital acts as a substitute for private capital and "crowds out" private investment. The estimated equations confirmed both forces but suggested that, on balance, public capital investment stimulates private investments.

The third exercise used a business location model to explore the relationship between public capital and employment growth. Here the average annual change in employment was estimated as a function of variables reflecting input costs (labor, energy, and land), market size, tax burden and public capital stick. The results showed that, after accounting for all the other factors that affect
employment, public capital had a positive statistically significant effect on employment growth.

Taken together, these three analyses indicate that public capital has positive impact on several measures of state level economic activity, output, investment and employment growth. The magnitudes of these effects are considerably smaller than those found at the national level.

DUTTA ROY CHAUDHARY (1993) studied inter state disparity in terms of overall measure of SDP and household consumer expenditure.

DHOLAKIA'S study (1994) also observed a marked tendency towards convergence among Indian states. Using the sectoral classification of data, his study of 20 state economies of India over the period 1961-62 to 1989-90 found that most of the states experiencing growth acceleration are relatively less well off.

An exercise had been undertaken in the paper of P. C. SARKER (1994), in the framework of the five year plans, to devise measures to assess how far misdistribution of resources among the states has been corrected and whether there has been a noticeable reduction in regional imbalances and changes in the placement of the different states according to the degree of development.

One of the major points of the study is that the influence of plan outlay towards the development of states would be quite considerable. The combine component scores considered as the composite index of development was explained in terms of per capita cumulative plan outlay (CPO).
The analysis of the ranking of states on the basis of the combined component scores (CCS) for all the five years showed that Punjab and Haryana were only 'agriculture SSI' based developed states throughout the study period and were able to occupy the first two positions in the development hierarchy. Bihar remained the least developed state and it had the maximum distance from Punjab. Bihar and Uttar Pradesh maintained the least distance between them and therefore more similarity in their pattern of planned development from 1970–71 onwards. West Bengal which was in the third position in 1960–61 dropped to the ninth position in 1986–87, actually received half of the per capita CPO that received by Punjab and Haryana. Again Bihar barely received about one third of the per capita CPO allocated to Punjab and Haryana.

In the paper of P. PURKAYASTHA (1995) entitled 'Infrastructure Sector and Withdrawal of the State' the examination is focused on the implications of the Fund-Bank policies on the infrastructure – particularly power and telecom. The withdrawal of the states from infrastructural services has serious consequences for the entire economy and in redressing inequitable development, both in regional and sectoral terms. Earlier, the provision of power, telecom, transport, irrigation etc. had been considered prerequisites for economic growth. Under conditions of large supply deficits, private sector investments in infrastructure do not lead to any competition but only to growth of monopolies and consequently high cost of services. The threat of withdrawal under conditions of shortages causes the states regulatory role to buckle. The high cost of such services means that only a handful of people are able to avail of infrastructure facilities,
widening even more the social disparities. Further, such investments tend to concentrate in areas that are relatively advanced, skewing the existing regional imbalances even further. With high cost of infrastructure access to vital requirements for industrial and agriculture growth are further constrained, leading to increase of existing disparities and lower growth. Construction of ‘safety nets’ as advocated, are merely palliatives and no solution to such disparities. The high cost of infrastructure makes it difficult for third world economies to be competitive internationally.

Restriction on resource movements plays an important role in justifying convergence in regional income levels. The existing theories do not highlight its importance. After providing a critique of the BARRO – SALA – I – MARTIN (1995) approach, the authors present a very preliminary study on the Indian states. It is observed that the states have been ‘diverging’ rather than converging in terms of their per capita income.

Studies on regional growth imbalances have made significant progress in recent years. CASHIN and SAHAY (1995) and MARJIT and MITRA (1996) have addressed the issue of regional convergence in India with similar data set comprising of Per Capita State Domestic Product over 1961 to 1991. But they came up with the different results.

In an article SUJATA MARJIT and SANDIP MITRA (1996) have tried to present a summary and a critique of the convergence hypothesis quite popular these days in the literature on endogenous growth. They have presented certain figures for the Indian states for the last 30 years and showed that they behaved differently
from the regions with the US, Japan and the OECD nations. They admit a couple of limitations regarding the data set. They try to look at the 30 year period preceding the phase of ongoing liberalization and found some reasons to question the application of the standard theory. In this article they also proposed to do the following. They would like to pursue a full fledged econometric exercise to precisely show the pattern of divergence after correcting the date with state level deflators. Second they shall try to build up a theoretical model that suits the observation after isolating the reasons for the pattern of state level growth rates. They shall analyze whether allocation of development assistance by the central government and anything to do with such pattern. A series of alternative measures of per capita growth rates would be attempted as well as some analysis would be done on convergence or divergence at the sectoral level, i.e., in agriculture, manufacturing etc.

The main objective of the paper, written by RAKESH MOHAN (1997) entitled 'Estimation of Requirements for Infrastructure Investments in India: Implication for Foreign Capital Flows and the Capital Market', is to place the required infrastructure investment within the broad macro economic context trends, such as savings, investments, sectoral outputs, balance of payments including both the current and capital accounts.

A key conclusion from this study is that high growth in trade in absolutely essential if India is to attract external capital inflows of the volumes desired and on a sustainable basis. Infrastructure investments of the level projected therefore imply a sustained growth in exports which is necessary for both the servicing of
increasing level of external liability and for equipment imports in the infrastructure sector. Of the external capital inflows projected our expectation is that about 40% could flow into the infrastructure sectors. Expecting a much higher level of external capital inflows than those projected might will be unrealistic. External savings cannot be expected to finance much more than 10 percent of total domestic investment requirements, or about 12 percent to 15 percent of non physical investments. The bulk of resources for overall investment for infrastructure would have to emanate from domestic savings. The analysis of domestic savings suggest that if an adequate level of resource generation is to take place in the country for the financing of the required investment, public sector savings must rise significantly over the next 5 to 10 years. Increase in public sector savings implies achieving of greater efficiency and financial viability of public sector enterprises such as SEBs. Thus improvement in public sector savings is likely to crowd in private savings flowing into infrastructure sectors. The private corporate sector has exhibited a very encouraging trend in the generation of savings through higher profits and retained earnings over the last few years their share in total savings can be expected to continue to increase as more segments of the economy become corporative. Similarly, household savings shows a continuing increase in financialisation since the early 1980s, along with a corresponding fall in household savings characterized as physical savings.

In an article named 'Regional Imbalance in Infrastructure and Income in India' BUDDHADEB GHOSH AND KUNAL CHATTOPADHYAY (1997) examined the
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linkages between per capita income, infrastructural investment and performances, and noticed the following observations – First, per capita public gross investment in infrastructure has remained at very low level. Secondly, the relationship between infrastructure stock per capita and GDP per capita among the Asian countries exhibit the positive linkage thereby implying that richer countries have higher infrastructural stock per capita. Thirdly, this positive relationship between PCNSDP and IDI is confirmed among the Indian states over two different time spans, 1981 and 1995. Moreover the position of the Indian states has remained largely unchanged during this period. The eastern states have lagged behind the western and northern states although there is some degree of heterogeneity among the states. Some southern states like Tamil Nadu, Kerala and Karnataka have also improved their positions considerably.

The paper titled “Infrastructure and Growth – Evidence from major states in India”, (1997) presented by KULDEEP KAUR, deals with the comparative study of different states relating to the impact of infrastructure on growth. Physical, social and financial infrastructures have been considered. The hypothesis that better infrastructural facilities bring higher growth rate has been tested economically by fitting linear regression equation. Positive regression coefficients and high value of $R^2$ indicate that the hypothesis may be accepted.

In the paper “Infrastructure Development of Major States of India” (1997) TUSHAR KANTIDAS studies the pre-requisite of sustained growth of infrastructure as an objective function to be tested. Various indicators for ranking of States by infrastructure have been analyses. Four techniques for the ranking
of the fourteen major states have been used. These are (a) Principal Component Analysis, (b) Factor Analysis, (c) Cluster Analysis and (d) Discriminant Analysis.

N. LALITA, in her paper “Financing of infrastructure in Low Income Economies Like India” (1997), studies the financial problems of infrastructure in respect of low income economies. The investment potentials both from national and international sources have also been examined. It gives a detailed analytical study of financial infrastructure with special reference to the problem of India.

A case study in respect of infrastructural development of West Bengal has been made in the paper titled “Economies of Infrastructure in India, A Case Study of the State of West Bengal” (1997) by BISWAJIT GUHA. The author studies the impact of infrastructure on development and the creation of disparity. A detailed region wise study of physical, social and financial infrastructure in West Bengal has been undertaken and recommendations of balanced growth of infrastructure in various regions have been made.

The paper “Economies Of Infrastructure In India’s Economic Growth And Core Infrastructural Development” (1997), written by G. HARIHARAN explains about various energy sectors from the 1950s analytically. The development of transportation is also reviewed.

DILIP HALDER takes up various dimensions of infrastructure including social overhead capital in his paper titled “Infrastructure: concept and provision” (1997) the analysis has been made both in micro and macro formats. The scope of private investment has been analyzed in case of various forms of infrastructure.
Further, the need for foreign direct investment for the improvement of managerial efficiency has been discussed in the light of national interest.

The paper written by BUDDHADEB GHOSH, SUGATA MARJIT AND CHIRANJIB NEOGI (1998) has obtained a relationship between initial PCNSDP and its growth rate over 35 years across Indian states which look very different from the one we usually experienced in the literature on convergence. This gives us something different and therefore should invoke further response from theoretical and empirical researchers.

It is quite possible that the region or states have different 'steady state' levels of per capita real income determined by fundamental long run parameters of saving rate and productivity. If the behavioral parameters are different across states, it may generate 'divergence'.

These results of this paper are very interesting and at the same time suggestive of some further extensions. First, there is strong statistical evidence in favor of 'divergence' across Indian states over the period from 1960 –61 to 1994 – 95. Although the coefficient of determination has been slightly weakened compared to the 30 years period ending in 1990 – 91, the coefficient of variation (meaning regional disparity) has recorded a strong exponential trend over last 35 years. Second, the allocation of plan funds across the states has been made in accordance with the level of income of the states, that is, the poorer states have been receiving proportionately large amount of development funds relative to their richer counterparts all through these years. Given such type of positive discrimination, rising regional disparity may be the outcome of lower efficiency
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with which public capital is utilized and also of infrastructural disparity across the states.

GHOSH and DE (1998) has developed a physical infrastructure development indicators (PIDI) for the states taking into account transport (rail and road), irrigation, spread of electricity, per capita consumption of electricity and telephones for different time points from 1971 to 1995 on the basis of principal component Analysis (PCA). According to them, regional imbalance in physical infrastructure has been strongly responsible for rising income disparity across the states.

SATYANANDA SAHOO AND K.K. SAXENA (1999 - 2000) wrote an article entitled ‘Infrastructure and Economic Development: Some Empirical Evidence’ – realizing the inherent problems associated in the provision of infrastructural services in India, the question arises, is infrastructure responsible for fostering economic growth? To examine the link between infrastructure and economic development few studies have been undertaken both in terms of time series and cross sectional data. Some studies have found one-way relationship from infrastructure to economic growth and some studies found bidirectional relationship. In other words, a high economic growth may lead to more investment in infrastructure services. Dealing with time series data these studies face severe limitation of non-stationary involved with the data which may lead to spurious regression. Furthermore, the relationship established through the production function estimates have not been checked for the existence of long run relationship.
To overcome the aforesaid limitations, an attempt is made in this paper to examine the extent of relationship between various stocks of infrastructure and gross domestic product in India. A Cobb-Douglas production function is estimated where gross domestic product at market prices is assumed to be the output and various sticks of infrastructural services along with total employment as inputs. Infrastructural services like electricity, gas, water supply, railways other transport, communication and storage facilities are included in the model. The study analyzed the impact of various stocks of infrastructure on economic growth in India and also examined the long run or equilibrium relationship through co integration analysis.

Inter state economic and social disparities in India have been increasing in spite of various governmental measures to develop backward areas. The article of N. J. Kurian (2000) assesses disparities in terms of demographic indicators, female literacy, state domestic product and poverty, development and non-development expenditure by state government, shares in plan outlay, investments, banking activities and infrastructure development.

There are considerable disparities in socio-economic development across the Indian states. Efforts through the planning process during the first three decades of the Indian Republic had only partially succeeded in reducing regional disparities. The accelerated economic growth since the early 1980s with increased participation by the private sector appears to have aggravated regional disparities. The ongoing economic reforms since 1991 with stabilization and
deregulation policies as their prime instruments and a very significant role for the private sector seem to have further aggravated the inter-state disparities.

The recent trends in investments both public and private, indicate that if left unaltered by effective public intervention inter-state disparities are likely to aggravate. There is a greater need for higher levels of investment in social services and infrastructure in backward states as compared to forward states. The government of backward states is fiscally weak and as such they are unable to find enough resources to meet these investment requirements. Forward states are fiscally better off to improve their comparatively better social and economic infrastructure further. The better off states are able to attract considerable amount of private investment, both domestic and foreign, to further improve their development potential because of the existing favorable investment climate including better socio-economic infrastructure. The backward states are unable to attract private investments because of unfavorable investment climate including poor infrastructure. They are unable to improve the investment climate by improving the existing poor infrastructural facilities due to lack of resources, which is linked to their poor development. Thus, they are in the vicious circle and the solution lies in breaking this circle.

An important factor which influences the speed of socio-economic progress of a state is the quality of governance. It is not a coincidence that the states which are in the forward group are better administered as compared to the states in the backward group. Forward states are quick in responding to opportunities which enable them to attract more private investment both from domestic and foreign
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Investments. It is efficiency of administration and availability of infrastructural facilities which are more attractive to them rather than the various tax concession and incentive offered by the state government. Private sector is willing to deal with political and bureaucratic corruption as long as things move faster. In the backward states, corruption and inefficiency coexist and this is a combination private investors avoid.

Recently in the paper of DIPANKAR DASGUPTA, PRADIP MAITI, ROBIN MUKHERJEE, SUBRATA SARKAR, SUBHENDU CHAKRABARTI (2000) offers analytical description of the economic performance of Indian states as reflected in their PCNSDP. Statistical analysis of data for the period 1960 – 61 to 1995 – 96 shows a clear tendency for Indian states to diverge in per capita SDP, but converge in shares of different sectors in the SDP. It was found that establishing the divergence or convergence among the Indian states is itself an interesting and challenging exercise.

A detailed analysis of the effects of education, human capital formation, health care, nutrition etc. may need to be studied carefully. Keeping in mind the positive trends displayed by agriculture and manufacture in the analysis of convergence, it is necessary to analyze sectoral allocations also. The developmental allocation to the states in the successive plans is expected to play an important explanatory role. The present study is limited in scope, especially since the primary focus is on SDP data.
CONCLUSION:

Our review shows that one of the most important issues in developing economies is regarding the role of infrastructure in promoting and sustaining economic growth. Aggregate economic growth definitely benefits from a health infrastructure.

Most of the studies proved that the impact of infrastructure investment is frequently greater and significant than that of investments in other forms of capital, because infrastructure services are required not only for direct consumption but also for raising productivity.

As we know that in India the influence of social, economic and institutional infrastructure towards the development of states are quite considerable. The nature and rate of growth of infrastructure determines the possibility of development of a country, diversification of production, expansion of trade, control of production growth, alleviation of poverty and protection. The World Development Report 1994, mentioned that the growth of national income of many developing countries was always associated with the growth of infrastructure.

Taking into consideration, the economists, included in our review, we will try to highlight the performance of public sector in meeting infrastructure requirements which is not satisfactory. Private entrepreneur can encourage higher risk in infrastructure sector. To raise the rate of economic growth, private sector, under new economic policy, have been allowed to invest. After that it should be
examined whether infrastructure provided by private sector is adequate or not to faster the rate of growth.
REFERENCES:


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