2.1 Introduction

This chapter explains the theoretical and empirical framework pertaining to regional, rural and economic development, which would form the background for the subsequent chapters. In the course of analysis, an attempt is made to present a brief account of the growth pole theory, Hirschman’s views, and finally about experiences of India and other developing countries relating to decentralized infrastructure and economic development. There are several paradigms or models of development in vogue at present and also many perspectives or viewpoints. A theory is expected to perform two major functions, namely, explanation and prediction of a phenomenon. There is no universally acceptable model or theory of rural infrastructural development, which can explain the existing phenomenon of rural development and predict its future course. This chapter is devoted to critical review of some of the contemporary paradigms of development and examines their relevance to rural development in the Indian context.

Part - I

2.2 Theories of Regional Development

An observation of the growth process of different countries show that development does not appear everywhere at the same time, when the process starts, some areas are favored while others are neglected. It ultimately causes regional disparities. Following are some of the important theories of economic growth and regional disparities promulgated by the economic thinkers from time to time. They explain the occurrence and persistence of regional disparities in the process of economic development. A few relevant theories are reviewed in the following paragraphs.

Growth pole theory was developed by French regional economist Francois Perroux (1955). He was concerned with the phenomenon of economic development and with the process of structural change. He attempted to explain how modern process of economic growth deviated from the stationary conception of equilibrium growth. His arguments were based on Schumpeter’s theories of the role of innovations and large-scale firms.

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In case of a forward linkage, an industry encourages investment in the subsequent stages of production either by transmitting innovation or effects of innovations forward. As a result of innovations, costs of production in the industry decline. It results in a fall in the price of its output. In this condition, the demand for this industry’s output by those industries, which use its output as input, will increase.

Perroux’s theory is based on Schumpeterian theory of development and theory of inter-industry linkages and industrial interdependence. According to him, “Growth does not appear everywhere and all at once, it appears in points or development poles, with variable intensities, it spreads along diverse channels and with varying terminal effects to the whole of the economy”. It is related to Perroux’s idea of an economic space as a field of forces consisting of centres, “from which centrifugal forces emanate and to which centripetal forces are attracted. Each centre, being a centre of attraction and repulsion, has its proper field which is set in the field of other centres.”

Professor Hirschman modified the growth pole theory and stated that, economic growth does not take place everywhere at the same time and once development starts, powerful forces would make for a spatial concentration of economic activities and development of the regions which have initial advantages. Thus, he propounded the concept of the emergence of growing points or growth poles in the process of development, because interregional imbalances in the development are inevitable to growth.

Hirschman (1958)\textsuperscript{6} discusses how polarized development may benefit both the growing region and the surrounding hinterland. Like Myrdal’s spread and backwash effects, Hirschman argues that “growth in a developed region produces favorable trickling-down effects within a lagging region as the lagging region’s goods are purchased and labor hired by the developed region. Growth may also produce unfavorable polarization effects resulting from competition and trade barriers erected by the developed region. The trickledown effect can encourage economic growth in hinterlands on account of the following reasons.

i. Interregional trade

ii. Transfer of capital to backward regions”.

Gunnar Myrdal (1957)\textsuperscript{7} in his thesis of Spread and Backwash Effects asserts that the “clustering of labour, capital, goods, and services in certain localities and regions leave the remaining areas, mostly rural, more or less in backwardness and accentuates regional inequality. Concentration of firms, capital and talented individuals in certain localities (growth points) at the expense of surrounding areas (backwash) lowers the level of economic development below what it would have been if growth points had never emerged. Against the backwash effects, there are, however, certain centrifugal spread effects of an expansionary momentum from the centres of economic expansion to other regions”.

In his cumulative causation theory of development and backwardness, Myrdal stated that, the “growth in the progressive region influence the growth in the lagging regions through the following two effects.

i. The spread effect

ii. The backwash effect

As observed by Gunnar Myrdal these two effects were never in equilibrium. The position was that, the spread effect would be greater than the backwash effect in developed regions, while in less developed regions, the backwash effect would be greater than spread effect”.

The Human capital model of development emphases the importance of human capital investment in the process of economic and social development, the human capital includes acquired mental and physical ability through education, training, health care and pursuit of some spiritual methods like yoga or meditation. The acquisition of human capital is largely through the investment of human efforts and money. The simplest and most important of this type of model is a schooling model, which relates economic development to schooling. This model is relevant to India and other developing countries.

At the same time when young, dynamic, healthy people migrate to advanced regions there would be an excess burden of children and old people in the backward regions. Because of increasing investment opportunities and expectation of higher profit, capital and also other resources tend to move to the rich regions. This further

\textsuperscript{7} Myrdal Gunnar (1957). Economic Theory and Underdeveloped Regions: Vora and Co. Publishers Pvt Ltd
depresses the economic activities in the backward regions and gradually leads to decaying of the regions. This is known as backwash effect.

In his version of cumulative causation theory Prof. Kaldor (1970) observed that, “the principle of cumulative causation is more or less similar to the existence of increasing returns to scale in manufacturing. The rich and big industries can have further access to internal and external economies as the size expands and they become even big and richer. The same is true of regions”.

Another important theory formulated by Walter Christaller [1933] offers one of the best explanations for regional development. The most important aspect of Christaller’s idea of the “central place system is the central place itself. The basic unit is a settlement and it could be a city, a town, or a village. The distinguishing characteristic of a central place is that it provides goods and services to an area larger than itself. The services may be extensive or limited, but the service function is common to all central places. The central place is the center of a region, but the term central refers to relative settlements that are mainly centers of a region and they are called central settlements, those that are not central are known as dispersed places. According to central place theory, places that have central functions and that cater to the population of a larger region in which central places of lesser importance also exist and they are central places of higher order. Those that are only important in their immediate surrounding area are called, correspondingly, central places of lower order. Small places usually not having central importance are called central places of auxiliary nature”.

Dr. R.P.Mishra in his modified growth foci approach integrated the main elements of the central place theory, the growth pole theory and the spatial diffusion theory. The number of growth foci will vary depending on the national and regional situation. Dr. R.P.Mishra conceived that central villages, services towns, market towns, growth points, growth centers and growth poles are all parts of the system of growth foci. According to him, the scheme of hierarchical levels can be as follows.

**Central Villages:** This would be one, which can serve 6 villages and about 6000 population with marketing, services, recreational and socio-cultural interaction functions.

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8 Christaller, Walter [1933], Central Places in Southern Germany. Trans, Charlisle W. Baskin London: Prentice Hall
**Service Centre:** It can be a small town with a population of 5000 or so. It should be able to serve 5 central villages i.e., population of about 30000. In such a centre, even all development units can have various types of shops to meet the needs of people.

**Growth Point:** This will again serve 5 service centers thus a population of 1.5 lakhs or so. This growth point can itself have a population of about 10000 to 25000. They will have good connectivity with the district head quarters. A sub-divisional office or a tensil headquarters can fit in with this. The centre can assume agro-industrial characters and will have close links with the growth points also. It will be strong in activities relating to the production, supply of inputs, marketing, processing, service functions etc.

**Growth Centers:** They can be district head quarters or other big towns. They can have population ranging from 50000 to 500000. Each growth centre can look after the growth needs of 12 lakhs or more population. Growth centers should have somewhat strong industrial base also. This is possible only if the industries follow a decentralized pattern.

**Growth Poles:** Capital cities and some very important district head quarters can act as growth poles. Ex: Bhopal, Indore, Bhilai, Raipur, Gwalior, Jabalpur can became growth poles. A growth poles in a small state can cover the entire state. With government support and with natural course (market mechanism) vertical and horizontal linkages can get strengthened. The role of the Government can be important as it can integrate functions over the space in shorter time period.

### 2.3 Integrated Development: Concept and Importance

In the next section, an attempt is made to examine the concept of integrated development and its relevance.

According to Rosenstein-Rodans’ (1970) Big Push theory, there is a minimum level of resources that must be devoted to a development programme, if it is to have chance of success. The essence of this theory is proceeding ‘bit by bit’ will not add up in its effects to the sum total of the single bits. A minimum quantum of investment is necessary though-not sufficient condition for success.

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Rosenstein-Rodan identifies “three different kinds of indivisibilities, which have considered as being the main obstacles to the development of developing countries. These are the indivisibility in the supply of social overhead capital (lumpiness of capital), the indivisibility of demand (complementarities of demand) and the indivisibility in the supply savings. He argues that a big push in terms of a high quantum of investment is required to scale the economic obstacles to development created by these three kinds of indivisibilities, and the external economies to which they give rise. This implies that the development process is a serious of discontinuous jumps, and each jump requires a ‘big push’. Besides, may be finally being a phenomenon of indivisibility in the vigour and drive required for successful development policy. An atmosphere of development may only arise after a critical minimum level of investment has been reached”.

2.4 Theories explaining the Role of Infrastructure in Creation of Systemic Capabilities

The central idea of Harvey Leibensteins’ (1957)\textsuperscript{10} thesis is that in order to attain sustained secular growth, it is essential that the initial stimulant to development be of a certain critical minimum size. According to Leibenstein, “economic backwardness has characterized by a set of interrelated factors, which have a certain degree of stability at their small equilibrium values. The stimulants have a tendency to raise per capita incomes above the equilibrium level. However, in backward economies, long-term economic development does not take place because the magnitude of stimulants is too small. In other word, efforts to escape from economic backwardness are they spontaneous or forced, are below the critical minimum, which has needed for sustained growth”.

Leibensteins’ thesis is more realistic than Rosenstein-Rodans’ big push theory, by giving a big push to the programme of industrialization all at once is not practicable in underdeveloped countries, which the critical minimum effort can be properly timed and broken up into series of smaller efforts to put the economy on the path of sustained development. This theory is also consistent with the concept of decentralized democratic planning, to which India, and most developing countries have wedded. Therefore, this paradigm provides good clues as to quantum of investment that is essential to make a programme take-off.

\textsuperscript{10} Leibenstein, Harvey. 1957. Economic Backwardness and Economic Growth, New York: John Wiley
W. Arthur Lewis’ (1954)\textsuperscript{11} model seems to provide a good framework to understand the process of economic development in labour-surplus developing countries like India. Its basic premise is that labour productivity in agriculture must increase substantially in order to generate surplus in the form of food to be used for development of the nonfarm sectors, and to release the surplus labour from agriculture for meeting the growing needs of the non-farm sector.

The Lewis model does not present a satisfactory analysis of the agricultural sector, in the sense that it fails to consider the possibility of a change of productivity in agriculture. Building upon the Lewis model, Ranis and Fei (1961) propounded a theory of economic growth, by first analyzing the role of the neglected agricultural sector in a static sense, and then generalizing the static analysis by introducing the possibility of an increase in agricultural productivity (Higgins 1969).

Cochrane (1969) critically reviews the model of Lewis and Rains and Fei, and concludes that the creation of investment capital needs to employ the surplus workers released from agriculture is the critical missing element in these models. He then suggests that the resources to finance the expensive process of agricultural modernization has can be obtained in any one or in a combination of three basic ways

1. By squeezing more agricultural surplus.
2. By slowing down the rate of investment in the non-farm sector and also in basic infrastructure.
3. By obtaining various types of foreign loans and grants.

The classical economists did not focus their attention on development or rural development. They perhaps assumed that economic growth would naturally lead to development. It was towards the end of World War II around 1945 that development became an important field of study and attracted several scholars. Most of the initial writings on the subject dealt on explaining the meaning of development, identifying factors affecting development and exploring interrelationship among the factors. Two distinct schools of thought emerged in the 1950s, namely, the Capitalist school and the Marxist school; and two distinct theories corresponding to them, namely the ‘Modernization Theory’ of the Capitalist School and ‘Dependency Theory’ of the Marxist School.

\textsuperscript{11}Lewis,W.A. 1954. Economic Development with Unlimited Supplies of Labour, The Manchester School, 22 May: 139-92
The dominant arguments of the Capitalists School have embodied in what is known as the Modernization Theory or the ‘Free World’ model of development. The Modernization Theory was the justification for the US hegemony in the context of the Cold War. The growth and development of this theory comprised economists, sociologists, historians, and anthropologists, and the determinants of development identified by them included both economic and non-economic factors. The essence of the theory was transfer of western technology and rationality, without changing class structure as a means of development, and removal of all social and ideological obstacles to such a process (Alavi and Shanin 1982:2). The Modernization theory was based on several assumptions, some of which are briefly stated here (Barnett 1988: 26; McKay 1990: 55).

1. Application of western science and technology in order to increase production is essential for achieving development.
2. The process of development can be delineated into a series of stages, and all societies pass through those stages.
3. In the process of development, modern ones replace traditional social and political institutions.
4. Democratic forms of governance will replace traditional feudal forms of political power.

In the context of rural development, the Modernization theory offers quite a few useful insights, such as the inevitability of some of the few uses of modern technology for increasing agricultural production and the need for replacing traditional feudal institutions by new democratic ones for shift towards greater scientific temper, and secular values and norms. However, the theory has lost much of its appeal due to its failure to predict and explain many economic phenomena, such as the faltering of the post-World War II boom in the 1960s, worldwide depression in the 1970s and the shift in the terms of international trade in favour of the developed countries. The theory also did not foresee the adverse environmental impacts of the capitalists/free market model of development and its unsustainability. In the faces of these weakness and criticisms, the theory has taken a few directions, such as international Keynesianism, with its emphasis on the establishment of a New International Economic Order and guarantee of basic needs and structural adjustment.
programmes. However, these new initiatives do not directly address the problem of rural development.

The Dependency theory came from Latin America, particularly from the work of Raul Prebisch (1960) and his associates at the Economic Commission for Latin America (ECLA). However, the chief representative for the theory was Andrew Gaunder Frank, who dismissed the modernization theory as useless from a policy perspective. Frank asserted that the relation between rich and poor nations was not only non-beneficial to the latter, but also positively destructive, hindering and distorting their development. In his view, development and underdevelopment were both results of interactions between societies. The dependency theory was very popular in the 1970s, as it provided a plausible explanation to the keeping of the problems of poverty and stagnation in developing countries, despite concerted efforts at solving them. Development realized the need for critically examining the existing relations between rich and poor countries to find out whether they were caring and beneficial to the poor nations or harmful.

In the context of rural development, we could say the theory provides a useful caveat that while identifying the determinants of rural development. We should critically examine various inter-sectoral linkages and interactions, and determine whether they are beneficial to rural people or not. If not, necessary policy measures should be taken to make the linkages and interactions beneficial to the rural people. A similar exercise needs to be done at the national level to find out which international economic development and political relationships are beneficial, and which are harmful to economic development in general, and rural development in particular.

2.5 Role of Institutions in Decentralized Development

2.5. (a) The Gandhian Model of Rural Development

Gandhijis\(^\text{12}\) approach to India’s rural development was holistic and people-centred. It was rooted in his conviction in the tenets of truth, non-violence and goodness of human beings. Hence, he placed more emphasis on moral and spiritual values than economic motives as means of overall development. Some of the salient features of the Gandhian model are

1. Real India is found not in its cities, but in its villages

2. The revival of villages is possible only when the villagers are exploited no more. Exploitation of villagers by city dwellers was violence in Gandhiji’s opinion.

3. Simple standard of living and high thinking, implying voluntary reduction of materialistic wants, and pursuit of moral and spiritual principles of life.

4. Dignity of labour everyone must earn in his bread by physical labour and one who labours must necessarily get his subsistence.

5. Preference to the use of indigenous (swadeshi) products, services and institutions.

Principal Components of the Gandhian Model are as follows

2.5. (b) Self-Sufficient Village Economy

Gandhiji’s concept of self-sufficiency was not a narrow one nor was it that of selfishness or arrogance. He realized the need for villagers to get those things from outside the villages, which they could not produce, in the village.

2.5. (c) Decentralization

Gandhiji believed that human happiness and moral development should be the supreme goal of society, and that this goal should be achieved through decentralization of political and economic powers.

2.5. (d) Panchayath Raj

Gandhiji envisaged that each villages in India would be a republic, where the village panchayath would have the full power of managing its affairs, including defense. He expected the panchayath to perform the legislative, executive and judicial functions necessary for a smooth functioning of the village economy. Various developmental activities such as education, health and sanitation would also be taken up by the village panchayath. It is good and in conformity with Gandhiji’s views that India now has made Panchayath Raj Institutions statutory bodies by passing the 73rd and 74th Constitutional Amendment Acts. It is hoped that Gandhiji’s dream of local self-governance through village Panchayaths would now be fulfilled.

2.6 The Concept of Integrated or Synchronized Development

The concept of integrated development refers to the appropriate location of social and economic activities over a physical space for the balanced development of a region. There are four types of integration. They are as follows
• Functional Integration
• Spatial Integration
• Temporal Integration
• Sectoral Integration

All these integration are integrated.

2.6. (a) Functional Integration

It refers to the integration of all economic and social activities, which influence both development and quality of living. It has a spatial nature, as there is a definite pattern in the disposal or concentration of socio-economic activities in space. Ex: Infrastructure and industrial development. The performance of industries depends on the availability, reliability and quality of infrastructure. Ex: Education and health, quality of living. Accessibility to these facilities, cost quality etc explain the functional interrelationship in a particular region which goes a long way towards the integrated regional development.

According to the integrated approach to development issues related to the areas on which socio-economic, environmental and cultural processes develop with different pace and with different effects. These processes are largely independent from the administrative structures established to manage them. This calls for the spatial policy to abandon the traditional approach to intervention, e.g. rural areas, city, in favour of an individualized approach to various territories defined based on socio-economic and spatial characteristics in a dynamic perspective. In consideration of the need to conduct efficient spatial policy, an attempt has been made to systematize numerous terms referring to national spatial development and spatial policy, such as spatial development, functional areas including rural and urban areas where socio-economic policies are concentrated.

2.6. (b) Sectoral Integration

The most important aspect is sectoral integration at all levels. ex: Agriculture, industries, power, transport etc. In our planning mechanism there are some attempts for sectoral integration (may be input-output relationship), but at the macro (state) and micro (district) levels there is hardly any mechanism for examining the inter relationship among the sectoral targets.
Sectoral integration is detailed situation analyses of the sectors, but focus more on how to move on sectoral plans address various concerns arising within the sectors. Such concerns may include better governance and improved public administration, improved services delivery, public works and natural resources management. Sectoral integration describe the existing opportunities, constraints and actions within the sector and help to identify the way forward to achieve sectoral policy goals.

2.6. (c) Spatial Integration

Spatial integration is another equally important aspect of synchronized development. In the spatial integration, more importance should be given to horizontal and vertical spatial linkages. The choices are areal bases of different scales. It does not mean locating different activities in different regions, but the hierarchical location of economic development at different levels. Spatial integration planning is critical for delivering economic, social and environmental benefits by creating more stable and predictable conditions for investment and development, by securing community benefits from development, and by promoting prudent use of land and natural resources for development. Spatial integrated planning is thus an important lever for promoting sustainable development and improving quality of life. The growing commitment to sustainable development in many countries and the increasing interest in spatial planning systems and policies means that there is currently considerable opportunity to reshape and strengthen spatial planning systems across the countries. In our planning, we treat each region as a separate entity. Even rural and urban areas are treated as separate entities. Urban centers are made as centers of exploitation, it means the impoverishment of rural areas, sanction process, and the other extreme is insulation of rural areas from urban areas.

The infrastructural approach to rural development is one method commonly used by most Third World countries. Abumere (2002) defined “rural infrastructure to include the system of physical, human, and institutional forms of capital which enables rural residents to better perform their production, processing, and distribution activities, as well as help to improve the overall quality of life. Some of these infrastructures are roads, communication network, irrigation, storage facilities, market facilities, research and extension institutions, schools and universities which train and turn out a variety of skilled agricultural workers”.

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Rural infrastructure can be better understood as those “specialized elements in the development process that bring about improvements in the socio-economic welfare of the rural dwellers\textsuperscript{13}. They are catalysts of development, and at the same time their presence can be an indicator of the level of development. On the other hand, the presence of certain types of infrastructure such as electricity may not bring about significant improvements in the life of the people unless when combined with other variables. The following can be classified as social infrastructure; health (hospitals, dispensaries, maternities, health centers), education (all types of schools except universities) and utilities (water and electricity)\textsuperscript{13}.

Be it physical, social or institutional infrastructure, the theoretical premise of the infrastructural approach to rural development is predicated on a modernization theory called the trickle-down theory of development. It is a general economic development model of the American economist A.O. Hirschman. According to Hirschman’s (1958) growth is supposed to trickle down from the core, which emerges through polarization. Hirschman as polarization collectively referred to the forces of concentration. The term polarization is actually the process of spatial concentration of resources into a core. He argued that polarization should be viewed as an inevitable characteristic of the early stages of economic development. According to him, the corollary of sectorally unbalanced growth is geographically uneven development, and he specifically cited Perroux’s (1955) idea of natural growth pole. The crucial argument, however, was that eventually development in the core will lead to the “trickling down” of growth-inducing tendencies to backwash regions. The implication of his thesis is that government should not intervene to reduce inequalities. Hirschman’s approach is therefore set in the traditional liberal model of letting the market decide.

Most of those who perceive development as a process whereby societies or social institutions change or more from tradition or less developed conditions to more complex and impersonal conditions are modernization scholars. Oyeleye (1987) conceived “rural development as involving the process of trickling-down of modern infrastructural facilities and ideas from the more developed urban areas to rural areas, i.e. a process of the exportation of urbanization to rural communities\textsuperscript{13}. Abumere

\textsuperscript{13}Oguzor, Nkasiobi Silas (2010). \textit{A Spatial Anaysis of Infrastructure and Social Services in Rural Nigeria: Implications for Public Policy}, Geo Tropico, 5(1), Articulor 2: 25-38
(2002) stresses that if “rural development is defined as a strategy designed to improve the economic, social, and cultural life of the poor rural dweller, then the definition connotes that the inputs of agents of development (good roads, potable water, electricity supply, etc) into the rural areas must be carefully thought out and delivered in a consistent manner. This is regardless of whether these agents of improvement physically move from the urban to the rural area, or vice-versa”.

Majority of the existing theories and models of rural development focus attention mainly on structural aspects of rural development rather than the spatial expression of the process of rural development. The theory of trickle-down growth and development is relatively similar to the growth pole or growth centre theory. However, in studies such as this one, some scholars consider the growth pole theory or model to be more appropriate. This is largely because Perroux (1955, 1971) and Livingstone’s (1971) growth pole concept and growth centre concept lie at the core of current regional planning and forms a large proportion of regional planning action. A fact strongly affirmed by Alden and Morgan (1974) as well as Friedman and Weaver (1979). In the words of Perroux “growth does not appear everywhere at the same time; it manifests itself in points or poles of growth with variable intensities; it spreads by different channels and with variable terminal effects for the economy as a whole. Hence, a pole is recognized to be a point in abstract economic space to which centripetal forces are attracted and from which (in time) centrifugal forces emanate throughout the field of influence of the set of activities constituting the pole. One major factor influencing structural differentiation and so doing creating a pole is the key industry”.

Later, further modifications of the concept permitted a growth pole to mean simply the geographical clustering of economic activity in general. This implies that spatial concentration is more efficient and more growth inducing. According to Okafor and Onokerhoraye (1986), one of the main advantages of this model as a tool of spatial analysis and planning of rural development relates to its total coverage of the national space economy thus embracing both urban and rural development and actually seeing this in an integrated way. Such a system of spatial development within the space economy of any country will counteract the splintering of functions and prevent parasitic development (Ayeni 1980).
Part - II

2.7 Empirical Evidences

A good number of empirical studies clearly reveal the existence of positive relationship between infrastructure development and economic development. Following are some of the important studies, which explain the positive relationship between infrastructure development and economic development.

Barnes Douglas et al., (1986) has observed that tremendous capital investments in rural electrification have had the desired impact on rural areas. This study empirically examined what agricultural impact electricity and other infrastructure improvements have had on 108 villages in three states. The conclusion is that rural electrification has had a direct impact on agricultural productivity through private investment in electric pumps. Although rural electrification has had a significant impact on agriculture, there has been no explosive growth as was anticipated by many of the early planners.

Meenakshi Rajeev (2008) opines that an inclusive economic growth is the most talked about issue in India. This is due to the fact that the impacts of the recent spectacular growth have not been able to percolate down to various segments of population, most importantly to the rural population. Rural infrastructure in India has still remained far from satisfactory and amongst others, lack of funds in one critical reason for this. The study finds that many projects remain incomplete even after receiving funds under RIDF and certain measures and necessary to ensure proper utilization of funds as well as to reduce infrastructure rural disparity in India.

Hendrick Roller Lars and Leonard Waverman (2001), they investigate how telecommunication infrastructure affects economic growth. They use evidence from 21 OECD countries over 20 year’s period to examine the impacts of telecommunication development may have had. They jointly estimate a micro model for telecommunication investment with the macro production function. They find evidence of significant positive causal link, especially when a critical mass of telecommunication infrastructure is present. Interestingly critical mass appears to be at a level of telecommunication infrastructure that is near universal service.

Dutta Amitava (1997) explains that improvements in different components of telecommunications infrastructure have not been uniform, and vary across the countries. He first examines the historical data from twenty-three countries over a
twenty-three-year period (1972-94) to catalog inadequacies in basic infrastructure compared with industrialized nations. He then analyzes the data on sector reform in seven developing countries, identifying improvements in basic service, mobile, cellular, paging, and other infrastructure components. The impact of reform is quantified, and the analysis suggests how privatization efforts might be sequenced and targeted to improve infrastructure in developing countries.

G. Jacoby Hanan (1998), develops and implements a method for non-parametrically estimating the benefits from road projects at the household level using the relationship between the value of farmland and its distance to agricultural markets. The empirical analysis, using data from Nepal, suggests that providing extensive road access to markets would confer substantial benefits on average, much of these going to poor households. However, the benefits would not be large enough or targeted efficiently enough to appreciably reduce income inequality among the population.

Shenggen Fan et al., in their study estimate the impacts of different types of government expenditure on agricultural growth and rural poverty in Thailand. The results show that, despite Thailand’s middle-income status, public investments in agricultural research and development, irrigation, rural education, and infrastructure (including roads and electricity), still have positive marginal impacts on agricultural productivity growth and rural poverty reduction.

Dasgupta Dispankar and Pradip Maiti (2000) offer an analytical description of the economic performance of Indian states as reflected in their per capita (net) state domestic product. Statistical analysis of data for the period 1960-61 to 1995-96 shows the clear tendency for Indian state to diverge in per capita SDP, but converge in shares of different sectors in the SDP.

Wanmali Sudhir and Yassir Islam (1995) analyze the spatial distribution of rural services in selected regions of three states in India (Andhra Pradesh, Maharashtra, and Tamil Nadu), based on data collected over three decades, there has been a tremendous improvement in rural service provision, since the late 1960s, especially in smaller sized settlements. Over time, more services that are complex in particular, have become more widely available. The analysis suggests how the concepts and methodologies employed in this study might provide the basis for a
more integrated regional developmental approach to planning and formulation of policy for rural service provision at the district level in India.

Gilberto M. Llanto explains that global markets for goods and services have opened for countries that have made substantial investments in technological innovations in transportation, communications and production techniques, inventory management and the rapid rate of innovations in financial instruments among others. This study presents in broad strokes a chronicle of infrastructure developments in the Philippines in the last twenty-five years. It covers the infrastructure experience across the Marcos regime to the Estrada administration.

Prabir De and Buddhadeb Ghosh (2005), tries to find out the role played by infrastructure facilities in economic development across South Asian countries over the past quarter century. The findings are statistically very significant to warrant major changes in future regional policies in order to remove rising regional disparities in both infrastructure and income. This also has a strong bearing on the success of poverty removal policies, as the poor are regionally concentrated in such a diverse, heterogeneous region of the world, where market imperfections are abound and insurmountable.

Olayiwola, L M. (2005), examines the status of the art with rural infrastructural development in Nigeria between 1960 and 1990. It reviews the various rural infrastructural development programmes of the government over the years. The paper highlighted the achievements of the government rural infrastructural programmes. Finally, the authors discuss the problems and challenges posed by the government and responses to the rural infrastructural needs of the people.

Cho Seong Hoon, et al, (2007), examines the uses of locally weighted regression to identify county-level characteristics that serve as drivers of creative employment throughout the southern United States. They found that higher per capita income, greater infrastructure investments, and the rural nature of a county tended to promote creative employment density, while higher scores on a natural amenity index had the opposite effect. They were also able to identify and map clusters of rural counties where the marginal effects of these variables on creative employment density were greatest. These findings should help rural communities to promote creative employment growth as a means of furthering rural economic development.
Sahoo Pravakar et al, (2010), investigate the role of infrastructure in promoting economic growth in China for the period 1975 to 2007. Overall, the results reveal that infrastructure stock, labour force, public and private investments have played an important role in economic growth in China. Moreover they find that infrastructure development in China has significant positive contribution to growth than both private and public investment. The experience from China suggests that it is necessary to design an economic policy that improves the physical infrastructure as well as human capital formation for sustainable economic growth in developing countries.

Majumder Rajarshi (2004) examines the veracity of this argument in light of empirical results at the district level using a multidimensional approach with sub-sectoral, sectoral and composite indices of development and infrastructural availability. Significant association between infrastructural and development levels of regions is observed, though the magnitude has declined in recent years. This association is different for regions at different stages of development. The findings suggest that identification of specific requirements of different regions, benefit-cost analysis, followed by infrastructural expansion are major planks of balanced regional development.

Haider Syed Zeeshan, et al, (2012), study finds out the impact of infrastructure on economic growth of Pakistan. In this regard, time series data has been collected from 1972 to 2009 and Gross Domestic Product (GDP) is considered as dependent variable, while Gross Fixed Capital Formation (GFCF), Per Capita Health Expenditure (PCHE) and Total Generation of Electricity (TGE) used as proxy for infrastructure. After collection of data on above cited variables, stationarity of all variables checked by Augmented Dickey Fuller (ADF) test and found that all variables are non-stationary at their levels and become stationary at their first difference. Then they apply Ordinary Least Square (OLS) to find short-run relation between variables and found that infrastructure has contributing positive association in Pakistan. However, all the assumptions are also checked to avoid the problem of spuriousness. On the basis of empirical findings, it has suggested that government and policy makers should focus on the development of infrastructure, which contributes to economic growth by directly and indirectly.
Goel Deepika (2002) has estimated the cost elasticity of infrastructure inputs. For this purpose she has postulated a variable cost function model for the manufacturing sector with cost as a function of the prices of the variable inputs, levels of output and infrastructure stocks. Variable inputs include capital, labour and intermediate input. She has used time series data and it pertains to the period 1965-1999. Twenty-three infrastructure variables are used in this study, which, are aggregated using the principal component methodology. Three alternative specifications of the quasi-fixed inputs are explored. The alternatives are economic infrastructure, social infrastructure and aggregate infrastructure. Estimated results suggest that infrastructure provision enhances the productivity in the manufacturing sector and it helps to lower the costs in the sector.

2.8 Implications

Rural infrastructure development is a strategy to enable a specific group of people, poor rural women and men, to gain for themselves and their children more of what they want and need. It involves helping the poorest among those who seek a livelihood in the rural areas to demand and control more of the benefits of rural development through the group includes small scale farmers, tenants and the landless.

As measurement of the level and pace of rural development is useful for a number of purpose, such as the determination of the extent of economic and social well being of rural people, serving as a benchmark for future planning, facilitating the monitoring, evaluation and control of ongoing programmes, and spatial and temporal comparisons of the development.

To be meaningful, measures of rural infrastructure development must be consistent with the objectives of rural infrastructure development. A measure should provide, at the minimum, an indication of such commonly accepted objectives of development as per capita availability of life sustaining goods or per capita income in rural areas as well as some idea of the distribution of income, assets and other means of socio-economic welfare.

There is no universally acceptable measure of rural development that captures its multi-faced nature the choice of measure of rural infrastructure development that captures its multi-faced nature. The choice of measure depends upon the purpose of measurement and the availability of requisite information. Commonly used measures
of rural infrastructure development can be categorized into two classes, namely, measures of level of rural infrastructure development and measures of distribution of rural development.

2.9 Conclusion

The review of the theories of economic growth shows that, in the process of economic growth existence of regional disparities are inevitable and development does not appear everywhere at the same time. The growth pole theory of Hirschman, the concept of integrated development and the central place theory of Walter Christaller throw light on the problem of regional disparities in the process of economic growth.

A review of empirical studies reveals that adequate and balanced development of infrastructure would cure the problem of regional disparities in economic development. Hence, the planners, economists and policy makers all over the world have recognized the role of both economic and social infrastructure in the process of economic development. Therefore, it is wise on the part of Government to spend more on infrastructure development, particularly in developing economies. Several studies revealed that development of rural infrastructure has positive impact on poverty reduction, job creation, agricultural development, inclusive growth and balanced regional development.