THE PROCESS OF URBANIZATION AND REGIONAL DEVELOPMENT IN BANGLADESH (1951-1981)

Dissertation submitted to the Jawaharlal Nehru University in partial fulfilment of the requirements for the Award of the Degree of

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Submitted by

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CENTRE FOR THE STUDY
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CERTIFICATE

This is to certify that this dissertation entitled "**The Process of Urbanization and Regional Development in Bangladesh (1951-1981)**", submitted by **MD. MIZANUR RAHMAN** in partial fulfilment of the requirements for the award of the degree of **MASTER OF PHILOSOPHY (M.Phil)** of the University, is, to the best of our knowledge a bonafide work.

We recommend this dissertation be placed before the examiners for evaluation.

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INTRODUCTION :

Bangladesh though one of the least urbanized countries in the ESCAP and SAARC regions,and the eigth most populous country in the world, has been experiencing rapid urbanization in recent years.[1] Within an area of 143,998 Km^2 about 110 million people live in 68,000 rural revenue mouzas, 85,650 village clusters and in 460 officially declared urban areas which include the districts and thana towns. According to an estimate of the World Bank (1985) 29.4 million people lived in the urban areas in 1990 and they constituted 20.1 per cent of the national population. In 1981, the urban population was 13.3 million or 15.1 per cent of the total according to the same source.[2]

The level of urbanization in Bangladesh is lower than that of India, Pakistan and Sri Lanka. The growth rate of population is 2.5 - 3 per cent per annum in these three countries and the growth in real GDP exceeded population growth. In Bangladesh, the long-term growth rate in GNP per capita has been quite stagnant, (The GNP per capita for India is 1.3, Pakistan 2.8, Srilanka 2.6 and Bangladesh 0.3

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1. See World Bank (1985), "Bangladesh Economic and Social Development Prospects", Vol.III (Report No.5409), Washington, D.C., U.S.A.

2. For detailed in Khurshid Alam, and Salma A.Shafi (1990), "Urbanization Process in Bangladesh and the Challenges", Journal of Bangladesh Institute of Planners, Dhaka, Vol.1, Nos.1 & 2, p. 73-81.

respectively, 1960-82). Although Bangladesh has less income inequality than in India, in view of its lower per capita income, a larger proportion of the population in the country is below the poverty line than in India.[3] Alamgir's [4] stimate reveals higher incidence than that of Khan [5], because of more restrictive assumption of the poverty norm adopted by the former. The poverty ratio in Bangladesh and Nepal are higher in view of their relatively lower per capita incomes among the SAARC countries.[6] However, the rate of increase of urban population has accelerated during the last decades. In 1981, the share of urban population was more than four times than in the early part of this century. From 1901 to 1941, the share of urban population increased on an average by only 0.34 per cent per year. From 1951 to 1974, it grew by 0.70 per cent per year and during the post-independence period of 1974-1981, the growth rate was 1.64 per cent per year. During this period, urban areas

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3. I.N. Mukherji (1982), "Domestic Conflicts in South Asia", Economic and Ethnic Dimensions in U.Phadnis,edited, Bahdur, Muni, JNU, p.2, 15 (Table - 1).

4. Mohiuddin Alamgir, "Poverty, Inequality and Social Welfare : Measurement, Evidence and Politics", The Bangladesh Development Studies, April 1975, p.171.

5. A.R. Khan, "Poverty and Inequality in Rural Bangladesh", in ILO, Poverty and Landlessness in Rural Asia, Geneva, 1977.

6. I.N. Mukherji (1982), Op.cit. p.2.

with population of more than 100,000 grew at a much faster rate than the average rate of growth. In otherwords, the larger towns grew faster than the medium and small-towns with respect to their economic conditions. Huge rural to urban migration, particularly to the larger cities, have contributed to a great extent to the accelerated growth of urban population. At present the growth rate is even higher. The urban population of Bangladesh doubles within 11 years.

Urbanization is a neglected area of research in Bangladesh. The present study attempts to provide some insights into recent level of economic development and the process of urbanization. It explores regional variations in urbanization and relates such differences to selected indicators of socio-economic development. It also examines components of urban growth, and assesses the implications of urbanization on some aspects of national economy.

The broad spectrum of problems engendered by the process of urbanization in the world draws attention of specialists of different profiles. There are, however, three approaches towards the study of urbanization - philosophical, architectural and economico-geographical. Recently, these problems have been examined from the standpoint of geo-economics, planning of the national economy, sociology, geo-statistics and so on. Urbanization is very closely related with the whole process of socio-economic development of any country.

In Bangladesh, recent economic development efforts with an urban bias and emphasis on urban industrial development have precipitated two processes,first, concentration of urban population in a few selected urban areas, e.g., Dhaka (the city of capital), Chittagong and Khulna (port and industrial city); and second, a dualistic structure of the economy. (Lipton, [7] 1977; Vylder and Asplund[8] and Pramanik[9] 1982) According to neo-classical economic theory, the existence of regional income differences arises from dynamic adjustment lags due to the malfunctioning equilibrium mechanisms (Barts and Stein[10] 1968; Okun and Richardson[11], 1964).

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7. M. Lipton (1977), "Why Poor People Stay Poor : Urban Bias in World Bias in World Development", London, Monwarice Temple, Smith.

8. S.D.Vylder, and D. Asphund, (1979), Contradictions and Distortions in a Rural Economy : The Case of Bangladesh, Dhaka : SIDA Report.

9. A.H. Pramanik (1982), Development Through Urban Bias Public Expenditure : An Empirical Study of Bangladesh, Dhaka : Dhaka University Centre for Social Studies.

10. G.H.Bants and J.L.Stein (1968), "Regional Growth and Maturity in the United States : A Study of Regional Structural Change" in L.Needham (ed.), Regional Analysis - Selected Readings, England: Penguin Books, pp. 159-197.

11. B. Okun and R.W. Richardson (1964), "Regional Income Inequality and Internal Population Migration", in J. Friedmann and W. Alonso, (eds.), Regional Development and Planning - A Reader, Cambridge, Mass: MIT Press, pp. 303-318.

Such differentials are regarded as short-run phenomenon attributable to market imperfections and institutional rigidities. In the long-run it is expected that factor price differences would motivate factor (capital) movement from high income to low income regions thus bringing about long-run equilibrium in regional growth and prosperity (Williamson[12], 1978) as well as the rapid urbanization of the country itself[13].

'Urbanization' appears to be inevitably associated with development and modernization. The urbanization process in the western world was favourably associated with economic development. The analysis of the economic features of the urbanization process in South East Asia indicates substantial differences from the experience of the west. The first of these differences is the fact that many countries in the region are characterized by urban growth high in relation to the level of economic development. The level of urbanization has been taken as an index of economic 'growth' as well as 'development' of the country as a micro and a macro-

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12. J.G. Williamson (1978), "Regional Inequalities and the Process of National Development: A Discription of the Patterns", in J. Friedmann and W. Alonso, (eds.), Regional Policy -Readings in Theory and Applications, Cambridge, Mass: MIT Press, pp. 158-200.

13. M.A. Mohit (1989), "Regional Development and Urban Growth in Bangladesh: A Case for Small and Medium Town Development", A Conference paper to the 5th Bangladesh National Geographical Association (BNGA), Rajshahi, March 2-4, 1989.

region. The study of urbanization represents the macro-level and the study of cities and urban affairs the micro-level of interrelated phenomena rather than a single or two separate phenomena. But the process of economic development cannot be viewed separately from the process of overall development of a region. Hence this process is intrinsically related to structural and institutional changes in the economy, leading to multiplier effects in the other sectors.

In a sense, therefore, the process of economic development brings about changes in the socio-economic structure of a region through a decline in the primary sector's contribution to the GNP and a corresponding increase in the share of the other two sector's namely the secondary and the tertiary urban sectors of economy. This sectoral transformation is an end-product of the occupational mobility and the resultant shift of a section of the workforce contribution from one sector to another, thereby increasing the levels of productivity as well as their levels of economic infrastructural development of the region. In this context, Charles P. Kindle Berger[14] has rightly defined 'economic development as the process which involves changes in the technological and institutional organisation of production and the patterns of disitribution of income, bridging the persisting income

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14. See C.P. Kindle Berger (1952), "Review of the Economy of Turkey: The Economic Development of Guatemala; Report on Cuba". Review of Economics and Statistics, Vol. 34, No. 4 (November, 1952).

inequalities. Hence, the levels of economic development, the level of living, consumption of food, housing facilities and otherinfrastructural facilities could be taken as the development indicators. These factors evolve and contribute to the regional levels of development which is leads to the process of urbanization. So, it may be said that economic development is the horizontal process and urbanization is the vertical process for overall development of the country.

The level of urbanization is generally much higher in the currently industrialized and developed countries, with close to 80 percent of their total population living in urban areas compared with 30 per cent in the low-income developing countries (ESCAP - UN, 1989)[15]. Another study conducted by the United Nations Centre for Human Settlements, indicates that over 50 per cent of GNP of developing countries is generated by towns and cities. The figure is likely to increase two-thirds by the turn of the century. The World Commission on Environment and Development believes that a well developed "Urban system provides the backbone for national development through its flows of information, energy, capital, commerce and people (World Commission,

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15. ESCAP - UN, 1989: Economic and Social Survey of Asia and the Pacific, ESCAP/UN, Bangkok, Thailand, 1990, p.82.

1987)[16]. With this view it could be said that specialisation of activities based on surplus production leads to urbanization. On the otherhand, industries, commerce and transportation has accelerated the process of urbanization in recent periods. In developing countries like Bangladesh the process of urbanization can precede determination of level of spatial development. So, economic development and the process of urbanization are complementary to each other in both developed and developing countries like Bangladesh.

The positive association between development and urbanization seems to be borne out by the recent experience of developing countries in the ESCAP region. The level of urbanization has generally increased as development has proceeded. The countries which achieved higher levels of per capita income are thus also found to have reached higher levels of urbanization. The other general phenomenon observable is that the rate of urbanization (defined by the rate of growth of urban population) tends to slow down as countries achieve high levels of development (ESCAP/UN, 1989)[17].

The pattern and process of urbanization and development taking place in Bangladesh also seems to conform with

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16. World Commission, 1987, "Our Common Future", Oxford University Press, London.

17. ESCAP/UN. 1989. Op. Cit., p. 82.

these situations. Although urbanization is a necessary condition of modernization as well as development but overwhelming it concentrates in a few centres. Therefore, an attempt has been made in this study to examine the process of urbanization and its relation to economic development at regional levels of Bangladesh.

1.1.0 Conceptual Background of the Study :

Urbanization and regional development have not received much attention for the planned development in Bangladesh from the social scientists or from the geographers. There is a gap in geographical research in this area. The present study attempts the analysis in two areas : (i) urbanization, (ii) regional pattern of economic development in Bangladesh.

But we observe that the nature and the process of economic development and urbanization are not following the same pattern in both developed and developing countries. The concept of economic development is as complex as the concept of urbanization and consequently the study of the relationship between urbanization and economic development becomes an important subject matter in social sciences.

The concept and definitions of urbanization and economic development differ from country to country, andregion to region. These conceptual and definitional problems arise because of the different standards of per capita income, natural resources, etc. It therefore means

that the level of economic conditions and the process of urbanization are not the same in developed and underdeveloped regions. At present stage the study of urbanization and the relationship between economic development becomes more relevant in the developing and underdeveloped regions of the world. This is mainly because during the recent past the growth of urban population has been tremendously high while the economic development has been almost minimum. The concept of urbanization and economic development has been defined and redefined in so many urban researchers and the economists in different ways in context of spatio-temporal perspectives. In the following section we attach a few definitions given by several scholars and that concept can be helpful in the present study for our analytical framework.

The simplest and most common definition of urbanization refers to the proportion of population living in urban settlements to total population (Kingsley Davis[18] (1962)). The level of urbanization is the ratio of urban to total population at a given time. Geographers view urbanization as a process of concentration of population in larger human settlements either through multiplication of points of concentration or through increase in the rise of existing

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18. Ibid, p. 20

points of concentration[19]. It is fairly well accepted that this concentration process involves three major components : (1) an economic transformation whereby a basically agricultural economy is turning into a predominantly non-farm or manufacturing economy; (2) a spatial transformation in the distribution of population whereby cities grow in number and siize and social transformation takes place whereby a formerly rural society is turn led into an urban society whose individual members behave in such a way that they are qualified as "urbanites". Indeed, such a view of urbanization offers us a very good starting point for examining the process itself. The three components already put the vital ingredients of 'economy'(achievement of material wealth), 'people' and 'space' together[20] So, urbanization level depends on the space economy of the country. In these respect urbanization is not merely a demographic phenomenon. It has its economic and other concomitants all at the same time.Lampard[21] (1965) argues that there are three concepts of urbanization which have currency in the social sciences:

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19. Ibid, p. 21.

20. F.S. Sit Victor, "Urbanization and Development: A New Policy Perspective," in Chatterji (Manas) and others, (eds), Spatial, Environmental and Resource Pplicy in Developing Countries, Gower Publishing Co. Ltd., England, p.107.

21. Eric E.Lampard (1965), "Historical Aspects of Urbanization" in P.M. Hauser and L.F. Schnone (eds.), The Study of Urbanization, New York, 1965., p. 521.

the behavioural, the structural and the demographic, R.P. Misra[22] thinks of urbanization as a four-dimensional process: demographic, ecological, socio-technological and economic.

According to Hauser[23] (1965), urbanization refers to the proportion of population resident in urban places particularly the proportion of population engaged in secondary and tertiary sectors of economy in urban places[24] . Demographically, it is an increase in the proportion of urban population to the total population over a period of time. As long as there is an increase in this proportion, there is urbanization. Generally, the population gained by natural increase of urban centres and the rural to urban migration are the moving factors behind the process of urbanization.

P.Mitchell [25] (1956) refers to the term urbanization as a process of becoming urban, moving to towns and cities,

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22. R.P. Misra (1978), "Million Cities of India," Vikas Publishing Home Private Limited, New Delhi, 1978.

23. Cited in U.P.Shahi (1989), Urbanization in Gujarat: A Geographical Analysis, in Jagadish Singh edited, Institute for Rural Economic Development, India, 1989, p. 4.

24. Ibid.

25. Ibid.

changing from agriculture to other economic pursuits common to cities or urban centres and a corresponding change in behavioural pattern. G. Breese [26] (1969) conceptualizes urbanization as the modernization process of newly developing countries. While taking the scale and pace of urbanization, he says that differences in urbanization may arise because urbanization has taken place in the periods of colonization or exploitation by foreign countries or in connection with the emergence of nationhood following the end of colonial experience.

According to Harvey [27] (1975) urbanization, as a process, is to be regarded as change in a set of social relationships which stimulate the relationships established throughout society as a whole. Another aspect of urban phenomenon is its spatial form in which the various aspects of the physical structure are emphasized. Jakobson and Prakash[28] (1971) hold that urbanization, by whatever defini-

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26. G. Breese (1969), Urbanization in the Newly Developing Countries, New Delhi, 1969, p. 3.

27. D. Harvey, (1975), "The Political Economy of Urbanization in Advanced Capitalist Societies: The Case of the United States; in G. Gappert and H. Rose (eds.) The Social Economy of Cities, Urban Affairs, Annual Reviews, I. Beverly Hills, Sage Publications.

28. Leo Jackobson, and Ved Prakash (1971), "Urbanization and Urban Development: Proposals for an Integrated Policy Base, in Leo Jackson and Ved Prakash (eds) Urbanization and National Development, Sage Publications, Beverly Hills, California, 1971.

tion, is a phenomenon describing a 'process of change' in the situs of populations due to changing conditions in society at large. Its study entails an examination of the factors which start and sustain this process, as well as of its implications in broad general terms. Therefore, one could suggest that the study of urbanization represents the macro-level and the study of cites economic characteristics the micro-level of interrelated phenomenon along with a continum. Berry and Mohammad[29] (1977) are of the opinion that 'urbanization' is the diffusion of economic innovations and it is also a process of social change and spatial development. The assumption is that well coordinated development of socio-economic infrastructure is essential in order to maintain a high level of urban and economic development. Urban centres are considered to be the centres of diffusion of innovations due to their locational importance and geographical accessibility. The spatial linkages in general, and transport routes in particular, are the arteries of diffusion through which the innovations spread from higher order cities to lower order towns.

Patnaik[30] (1987) holds that economic growth and economic development are synonymous terms. Any interference in the distribution of GNP is considered as constraining eco-

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29. U.P. Shahi (1989), Op. Cit.

30. Cited in S.C. Patnaik (1987), "The Concept and Strategy of Sub - National Planning", in Angrish, A.C.(ed.) Regional Economic Planning in India, 1987, p. 2.

nomic growth. Roefic Hueting [31] (1986) takes a sharply differing view and criticizes the use of national income as an indicator of economic growth. For him economic growth is an increase in welfare which cannot be proxied by GDP, even roughly: "As a psychic, subjective category of personal experience, welfare is not observable and thus not directly measurable in figures". Hueting's solution to this problem is to identify a number of contributions to welfare which can be measured and use these as a system of indicators to indicate economic progress. His welfare contributors are production, employment, environment. Leisure, working conditions, income distribution and safety of the future. Hueting summarize this concepts as follows :

- Production growth (increase in GDP and non-monetary production) leading to an increase in consumption and, therefore, consumptions contribution to welfare.
- Economic growth, here defined as an increase in utility or welfare.
- Development is defined here as the progressive and sustainable achievement of capability by the most disadvantaged section of the population in question. It is a concept that combines increasing equity, the increasing realization of human potential and

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31. R. Hueting, (1986) New Scarcity and Economic Growth, Amsterdam, North Holland, 1980, and R. Hueting. "An Economic Scenario for a Conserver Economy" in Ekins, 1986.

ecological balance. From this definition it should be clear that development is only partially an economic progress.

Hueting concluded that the case that development is not a process that is much in evidence in the world today on any one of the three above defining counts, let alone on all of them. If the economic component of development, thus defined, an economic progress are the same thing, as might appear logical, it must ruefully be concluded that most societies are going economically backwards, a progress of underdevelopment that greatly belies the upward trend of global GDP.

According to Jhingan[32] (1976), the term 'economic development' is used interchangeably with such terms as 'economic growth', 'economic welfare', 'economic progress' and 'secular change'. However, economic development refers to the problems of underdeveloped countries and economic growth to those of advanced countries. The simplest distinction is made by A. Moddison[33] in these words, "the raising of income levels, is generally called economic growth in rich countries, and in poor ones it is called economic development". Development effects percolatefrom larger

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32. M.L.Jhingan (1976),"The Economics of Development and Planning, Vikas Publishing House Pvt. Ltd., New Delhi, p. 75.(1976)

33. Ibid.

cities to medium-sized and then to small urban centres.

Regional or spatial development practice will prove to be at the centre of research in the geographical study of development during the 1990's (Drakakis - Smith, 1990)[34]. The term 'regional' or 'spatial' development refers to the nature and causes of regional variations in the economic development within countries. Any analysis of the regional development must be undertaken with reference to regional patterns of urbanization. Any spatial inequality in development is held to be closely related with urbanization (EL - Shakhs,[35] 1972; Coates, et.al.[36], 1977; Wishwakarma[37], 1981). The regional inequality occurs as a result of increasing concentration of modernization in urban areas and particularly in the most populous urban centres (often the capital and the major urban centres), the non-inflexible traditional economy of the rural areas change more slowly

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34. D. Drakakis - Smith (edited, 1990), "Economic Growth and Urbanization in Developing Areas", for the IGU Commission on Third World Development, London.

35. S. El-Shaks, S. (1972), "Development, Primacy and systems of Cities", Journal of Developing Areas, 7,p.11-36.

36. B.E.Coates et.al., (1977), "Geography and Inequality", London, Oxford University Press.

37. R.K. Wishwakarma (1981), "Urban and Regional Planning Policy in India, New Delhi, Uppal Publishing Home.

(Coats, al.[38], 1977). It has been noted that both on international and regional levels, the growth of urbanization or urban economy and its impact on regional development is highly relevant today for developing countries which are now passing through different phases of economic development.

In our present study an important aspect in the analysis of levels of development. It gives a quantitative touch to the term "development". One gets a picture of the extent of development of a particular region. One can now compare two region and can say that one region is more developed than another. But here also subjectivity occurs because one has to chose various indicators to measure the levels of development. The selection of indicator is based on various logical arguments. To measure the level of development it is necessary to get a composite index of the set of indicators. The method used here is that of 'Ranking'. Composite index is obtained by straight forward summing of the rank order of the districts (regions) according to a set of variables. So, it may be said that development is a macro-level aspect and levels of development is the micro-level aspect of various economic phenomenon on a regional basis.

The "stages theory of growth" is one of the pioneer

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38. B.E. Coates et. al. Op. Cit.

concepts in this area of inquiry (Fisher[39], 1933 and 1939, Clark[40] 1940, 1957; Kuznets [41], 1959, Rostow [42], 1960). It postulates that all societies progress along a sequential path of economic growth and development.

Third World geographical studies have been undertaken by geographers of the affluent 'developed' world and those trained in the affluent 'developed' world. Both categories have been educated in the liberal ethos which postulates that geography of Third World countries is in essence a geography of "underdevelopment". The consequence of this viewpoint as described by Mcgee is that there has been a one-sided emphasis on the investigation of the process of development as a penetration of traditional systems by the elements of 'modernization' which have been equated with development (Coated by Mcgee, 1974). The analysis is coloured by assumptions that traditional systems have little

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39. A.G.B. Fisher (1933), "Capital and Growth of Knowledge", Economic Journal, 43 pp. 374-89.

40. C. Clark (1940 & 1957), "The Conditions of Economic Progress" London: Macmillan, 1957; First and Second Edition.

41. S. Kuznets (1959), "Six Lectures on Economic Growth" (Glencoe, Illinois: Free Press).

42. Rostow, W.W. (1960), "The Stages of Economic Growth: A Non-Comunist Manifesto", Cambridge: Cambridge University Press.

to contribute to the development process.[43]

R.P.Misra [44] (1984), holds that the concept of development is a human enterprise. Development is an increasing attainment of one's own cultural values. This conceptualization emphasizes the following nations. First, the development is a process, not a state. Second, that process ultimately refers to values, and third, that the values referred to are those of the people involved, not the values of the western world or any other world. Misra also describe his ideas with reference to the developed and developing countries. According to him, the policies and strategies to promote national development were often a reflection of what the developed countries wanted to do. In the 1950's foreign aid and savings were the main instruments of development. By the mid-1960's it became clear that high rates of did not gurantee the well-being of the poor and growth marginalized. Further every part of the country did not benefit equally. By the late 1960's, population control became a key issue. As the 1970's rolled over we stood confused about what development really meant. It was nei-

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43. Mahinder Santokh Singh, (1980), "Third World Geographical Studies: The Dependency Paradigm", in collection of Working Papers 1, University Kebangsaan Malaysia, "Geography and the Third World" ed. by Ismail Ahmed and Jamaluddin Md. Jahi (1987), International Seminar 14 - 18th May 1980, Kuala Lumpur, Malaysia.

44. R.P. Misra (1984), "Development Issues of Our Time", Concept Publishing Company, New Delhi pp. 34-65.

ther growth without distribution nor distribution without growth. As the 1980's advanced there is a visible change in the environment for and attitude towards real development. It also means restructuring of national and international orders to release latent energy dormant in individuals, groups, and nations. According to Misra, development therefore has a far deeper meaning and purpose than what of economists have been telling us so far. In fact, it is a meta-disciplinary field. It was seen as an economic phenomenon only because the economic aspects - production and consumption were easier to comprehend. These may very well be the consequences rather than the cause of development. At best they constitute only one segment of the overall development.

R.P.Misra also holds that development has also been seen from the perspective of space. The way in which space is organized internationally or intranationally reflects the changing relationship between man and nature and man and man. He stresses that space is not something that can be equated with nature; it contains a variety of societal process including the mode of production and distribution. According to him development is a process of change which a society decides to carry out within itself and its relations to the outside world. It is this societal process which gives rise to different human responsibilities and to equally different structures in space, which together generate a new social process. Development can thus be seen as a spa-

tial transformation process. The present study emphasises on the distribution of the fruits of economic development and its implications for space.

According to M.F. Dunford [45](1988) that the process of economic and social development, however, is very uneven in space. Unevenness was in part sectoral: different areas of economic activity, the spheres of material and artistic production, and the social relations of production and legal relations, for example, all developed unevenly. But unevenness was also geographical. As a result, geographical inequalities were widened, often quite sharply. Once capitalism had emerged the map of human activity underwent continual, rapid, and profound transformations. But just as economic development was accompanied by a reproduction of social inequality, the changing geography of capitalism was accompanied by a reproduction of spatial inequality. With the advent of industrial capitalism, however, disparities between rural areas and urban districts, between and within urban agglomerations in industrialising economies, and also between peripheral countries widened markedly. Rostow's stages theory considers economic inequality and regional disparity as a passing phenomena of 'take-off' stage which tends to disappear when the economy attains self sustaining

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45. M.F. Dunford (1988), "Capital, the State and Regional Development, Pion Ltd., London, pp. 1-10.

growth [46].

There are atleast three distinct hypotheses regarding the pattern of change in inter-regional disparities in 'per capita' net domestic product' during the process of national growth. One is "the self-perpetuation" hypothesis propounded by Highes [47] (1961) and found empirically valid by Booth [48](1964). According to this viewpoint, regional disparities in the process of national economic development. Diametrically opposite is the view that is contained in the "accordion effect" hypothesis propounded by Hanna [49](1959) and found empirically valid by Perloff [50] (1960) and Hanna[51] (1959). According to this viewpoint, regional disparities converge in the process of national economic development. More widely held view is that which is contained in "concentration cycle" hypothesis developed by Myrdal52 (1958),

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46. S.C. Patnaik (1987), Op. Cit. no. 30.

47. Ibid. p. 26.

48. Ibid. pp. 26-27.

49. Ibid. pp. 26-27.

50. Ibid. pp. 26-27.

51. Ibid. p.26-27.

52. Ibid. pp. 27.

Hirchman53 (1961), Williamson54 (1965). The proponents of this view hold that measures of inter-regional inequalities trace out an inverted U-shaped curve overtime - increasing initially to narrow down in later years.

We know that development process is marked by two opposite spatial processes, namely 'concentration and dispersion'. The concentration is the consequence of centripetal forces and dispersion of centrifugal forces. Concentration leads to clustering of human activities, dispersion brings about an even spread of activities. In the words of Hirchman55 (1958). "Inter-regional inequality of growth is an inevitable concomitant and condition of growth itself.

At the root of the regional problem and the process of uneven (inequality) development lie (1) a continuously changing functional and spatial differentiation of the process of social reproduction, and (2) inequalities within and between functionally and spatially differentiated

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53. A.D. Hirchman (1961),43he Strategy o43conomic Development", New Haven, Yale University Press.

54. J.B. Williamson (1965), "Regional Inequality and the Process of National Development: A Description of Patterns", Economic Development and Cultural Change, July 1965.

55. A.D. Hirchman (1958), Op.cit.

spheres of human activity56.

The evidence collected by Williamson (1965) shows fairly conclusively that regional disparities in 'per capita' income tend to widen in the early stages of the development process and then narrow. Williamson examines three types of evidence: the international cross-section data, short and long run time-series data for individual countries, and cross-section data for the United States, treating within the individual states as 'countries' and the countries within the states as regions. The measure of regional inequality taken is the coefficient of variation of regional 'per capita' income57.

1.2.0: Review of Literature

Urbanization has received considerable attention from scholars, international and agencies and different urban research organisation. It was started from 1970s as a modern phenomenon of increasing proportion of a country's population living in towns and cities. For the Third World country like Bangladesh, it has started very late.

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56. D. Lapple, P. Van Hoogstraten, (1980), "Remarks on the Spatial Structure of Capitalist Development: The Case of the Netherlands", in Regions in Crisis. New Perspectives in European Regional Theory Eds. J Carney, R. Hudson, J. Lewis, (Croom Helm, Beekenham, Kent), pp. 117-166.

57. Cited in A.P. Thirlwall (1989), "Growth and Development", with Special reference to developing countries, 4th Editor, Macmillan Education Ltd., p.9.

The current pace of urbanization of the developing countries of Asia is comparable to that of Europe and North America in the last century58. Thus the current rapid pace of urbanization of the developing world, and especially of Asia, should be taken as a welcome sign of development, and a presage to achieve more rapid progress in the future.59The main draw- back is that urbanization in the Third World countries as in Bangladesh is not much favourable towards balanced economic growth. So the importance of the study of urbanization with economic development becomes very important. When we observe the studies done on urbanization at international level as well as in Third World country like Bangladesh context, then very few studies have been done to relate the urbanization with the economic development at the regional level. Many studies on urbanization have been done by Western scholars. In the case of Third World nations like Bangladesh, a very few studies have been undertaken after the independence from the British and from Pakistan. A very small literature is available on our present there.The following sections will discussthe literature of urbanization and economic development in international studies and in the case of Bangladesh.

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58. S.H. Wellisz (1971), "Economic Development and Urbanization in Leo Jakobson and Ved Prakash (eds.) Urbanization and National Development, Baverly Hills, California, 1971, p.40.

59. Ibid.p.40.

If we consider the history of urbanization, Weber60 (1899)is the first person who introduced a new and modern phenomenon for the urban problem. In 1925 Pirenn's61 work also accepted urbanization for analysis. These two studies were restricted to the narrower demographic perspective i.e., the distribution of population between urban and rural areas and the causes and consequences of this distribution.

On the other hand development issues and theories have long been considered one of the major areas of research in the social sciences, particularly, in classical and neo-classical economics (Weber62 1929); Mead63 (1952). Major analysis in these studies has centered around the issues of shifting characteristics of labour force from agriculture economy to secondary and tertiary sectors of economy. Classical social theorists such as Marx and Weber emphasized the profound social transformation that accompany the growth of cities. The Marxian approach postulates that push factors play important role in the process of development as well as the process of urbanisation in Third World coun-

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60. Adna F, Welber, The Growth of Cities in the Nineteenth Century", New york Compumbia University Studies in History, 'Economics and Public Law, 1899.

61. Pirenne, Henri, "Medieval Cities", Princeton: Princeton University Press, 1925.

62. A.Weber (1929), "Alfred Weber's Theory of the Location of Industries" (Chicago: Chicago University Press).

63. J.E. Mead (1952), 'External Economics and Diseconomies in a Competitive Situation', Economic Journal, 62, pp.54-97.

tries. Due to heavy pressure on land, people started migrating from rural areas to urban areas with a view to be employed especially in non-agricultural sector.

Harris and Ulman64 (1945) have given classical principles of urbanism, identifying three different types of cities. According to them, cities are central place performing comprehensive services for surrounding areas.

United Nations65 (1948) for the first time made effort to collect data for a large number of countries on rural and urban population. Later on in 1952 the demographic year book66 contained rural-urban breakdowns of population for 160 countries and an introductory chapter on "Urban trends and characteristics". In these demographic year books, the analysis never focuses specifically on the trends and conditions of urbanization, but rather on urban rural differentials. The basic importance of these books is that these publications had actually stimulated research on urbanization.

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64. C.D. Harris and E.L.Ullmann, "The Nature of Cities" in Annals of American Academy of Political and Social Science, XLII, Nov. 1945, pp. 7-17.

65. United Nations (1948), Demographic Yearbook, New York, United Nations, 1949.

66. United Nations (1952), Demographic Yearbook, New York, United Nations. 1953.

For Davis and Golden67 (1954) since urbanization refers to a ratio where the urban population is divided by the total population, it is as much a function of the rural as of the urban population. The degree of urbanization in a given country or region can vary independently of the absolute number of people living in cities. They say that underdeveloped areas of the world are less urbanized than the developed ones. Both the authors have found that the degree of urbanization increases sharply as industrialisation increases. It is noticed that countries having peasant agrarian stage of economic development are least urbanized. While showing the precise extent of the association between economic development and urbanization, the authors prove that Asia (excluding U.S.S.R.)and Africa are mainly agrarian based with least urban share in the total population. The achievement of high levels of urbanization anywhere in the world had to wait for industrial revolution. Davis68 (1949) has also worked on world Urbanization.

In recent writings, urbanization has been closely linked with economic development; though the exact nature of

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67. Kingsley Davis, and H.H. Bolden, (1954), "Urbanization and the Development of Pre-Industrial Areas", Economic Development and Cultural Change, 3, pp.6-26.

68. Kingsley Davis, "World Urbanization 1950-1970, Vol. I. Basic data for Cities, Countries and Regions" Berkeley, Institute of International Studies, University of California, 1949.

relationship has never been clearly stated, Hoselitz[69] (1955), for instance, noted that while there is general agreement that the growth and development of cities is a necessary condition of economic development, there are also the findings which tend to show that the richer a country, the more urbanized it is and the larger a city in any country, the wealthier it is. However, there is as yet no definite opinion as to whether the existence of cities provided the basis for economic development or whether economic development represents the main source of origin and growth of cities. This ambivalence may be simply calling attention to the fact that the relation is complex and that our knowledge of the subject is still very circumscribed.[70]

Polarized urban growth in less developed countries with domineering primacy has been observed to be closely correlated with over urbanization. As Wellis[71] (1971) has argued, over urbanization "stands for a perverse stream of migration, sapping of economic strength of the hinterland, without corresponding large benefits to urban production. Instead of being a sign of development over urbanization is

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69. See B.F. Hoselitz (1955), "Generative and Parasitic Cities", in Economic Development and Cultural Change, III April, 1955.

70. U.P. Shahi (1989) Op. cit..

71. Stanislaw H. Wellis (1977), "Economic Development and Urbanization" in Leo Jakobson and Ved Prakash, eds., Urbanization and National Development, Beverly Hills: Sage Publications .

a sign of economic illness".

Carter[72] (1972) holds that urbanization and economic development go together. It is seen as a product of increasing economic specialization and advancing technology. He pointed out that there is no parallel in the past to the scale and pace with which urbanization is changing the world landscape at present.

Berry[73] (1962) pointed out that an economic relationship exists between the level of economic development of a country and degree of urbanization. These two are the basic criteria for the overall development of any country or region. Berry[74] (1961) in another study noted that cities perform essentially the same set of function as centres of transport routes, as centres of primary or secondary economic activities or as central places preparing tertiary economic functions.

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72. Cited in Miss Surekha, Pandit (1986), "Urbanization: The Indian Way", Concepts' International Series in Geography, No. 3, Concept Publishing Company, New Delhi, India, p. 289.

73. B.J.L., Berry (1962), "Same Relation of Urbanization and Basic Pattern of Economic Development", in F.R. Bryee (ed.) 1962, Urban Systems and Economic Development, 12 Eugene Oregon, 1962.

74. B.J.L., Berry (1961), "City Size Distribution and Economic Development", in Economic Development and Cultural Change, IX, July 1961, p. 575.

According to Sharma[75] (1972) economic development and urbanization are interrelated and interdependent. Economic development is an outcome of a composite function of primary, secondary and tertiary sectors of economic activities. He also mentioned in his paper that primary activities are associated with rural living, but in a low proportion, it is also found in the urban areas. Hence he also pointed out that secondary and tertiary activities are characteristic of urban areas of the region. This emphasises the linkages between the process of urbanization and increase in secondary and tertiary activities. In his opinion urbanization is not divorced from primary activities in its entirity. Sharma also analyzed the relation between degree of urbanization and level of economic development. He pointed out that economic development is an offspring of a composite function of primary, secondary and tertiary sectors of economic activities. He stresses the relationship between the process of urbanization and increase in secondary and tertiary activities. But urbanization is not divorced from primary activities in its entirity.

Brutzkus[76] (1974) emphasizes that polarized urban

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75. N. Sharma (1972), "Degree of Urbanization and Level of Economic Development in Chotanagpur : A Study in Nature of Relationship" in Indian Journal of Regional Science, Vol.IV, No.2, p.143, pp.142-153.

76. Eliezer Brutzkus, "Centralized Versus Decentralized Pattern of Urbanization in Developing Countries: An attempt to elucidate a Guideline Principle. Economic Development and Cultural Change, 23 (July): 633-52, 638-639).

growth is almost a natural form of urbanization, that anything short of a determined effort on the part of the government to decentralize urbanization will result in enhancing primacy. He agrees with Myrdal's postulate of perpetuating and self-increasing regional disparities under a regime close to 'Laissez faire laissez passer' in regional policy.

Lampard[77] (1955), suggests that the process of economic development is inevitably accompanied by a process of concentration, that nowhere amongst the advanced nations of the world has concentration consequently failed to appear. Lampard suggests that this process of concentration or urbanization is not so much a passive index of the process of economic development but rather an active ingredient the means through which an increasingly specialized economy evolves.

A more systematic and formal attempt to incorporate the concepts and proposition presented above into a general theory of urbanization has been outlined by Friedmann[78] (1968).In his information model of urbanization, Friedmann,

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77. E.E. Lampard (1955), "The History of Cities in the Economically Advanced Areas", Economic Development and Cultural Change.

78. Cited in Alden, Jermy, Alden and Robert Morgan, "Regional Planning: A Comprehensive View," Leonard Hill Books an Intentext Publisher, 1974 [J.Friedmann, "An Information Model of Urbanisation", Urban Affairs Quarterly, Vol. IV, No. 1968.

argues that the majority of traditional reasons for explaining the growth of cities can be synthesized around the concept of the city as a high access social system. Friedmanns model, too, does not specify the conditions for and the mechanism behind the transition from the nebulous structures of pre-industrial stage to full-fledged spatial organisations of industrial societies. It also does not distinguish between descriptive, positive and normative elements.

Fanon[79] (1967), has argued that the Third World is not homogeneous, and that the disparities within this segment were born of colonial process. McGee[80] (1974) took the initiative in developing a theory of colonial urbanization. He was well acquainted with the situation in South East Asia. Unlike Hoselitz and Friedmann, he did not assume that heterogenetic cities were more likely to be generative than parasitic in terms of economic growth.

The contribution of McGee lay in his theory of urban involution.The theory provided a sectoral model of the urban economy within the frame-work of dependent capitalism.

McGee's ideas have been revived and further developed

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79. F.Fanon (1967), "The Wretched of the Earth", Penguin Books.

80. Cited in R.P. Misra (1984), Op.Cit.

in the recent works of Slater[81] and Santos[82]. Their works were primarily concerned with the wider question of the spatial organization of under development, but they have also pointed to the need for a new approach to the study of urbanization in the undeveloped countries.

T.G. McGee argued that the process of urbanization might be more accurately labelled as 'Pseudo-Urbanization'. In some Third World countries, city growth is not to be equated with urbanization. Hence, sectoral diversification is not occurring together with the redistribution of population from the rural to urban areas. This raises question of regarding the possibilities of economic growth and the inevitability of urban revolution.[83]

Breese[84] (1966) has done a very relevant study of urbanization in newly developing countries, which can help in making analytical framework for analysing urbanization pattern. The positive aspect of the development is that urbanization is usually closely associated with increasing economic well-being. According to Wellisz the extent of

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81. D. Slater (1977), "Geography and Underdevelopment", Antipode, vol. 9, no.3, pp. 1-21.

82. M. Santos (1977), "Planning Underdevelopment", Antidote. Vol. 9. No. 3, 1977, pp. 86-97.

83. T.G. McGee (1971), "The Urbanization Process in the Third World: Exploration in Search of a Theory", London, G. Bell.

84. Gerald Breese (1966), "Urbanization in Newly Developing Countries", Prentice Hall, New York.

urbanization is closely associated with the GNP per capita a widely used index of economic development, and an association also exists between the level of urbanization and GNP growth. He also pointed out that current rapid pace of urbanization in Asian developing countries should be taken as a welcome sign of development, and as a presage to achieve more rapid progress in the future.[85]

According to Misra and Dung[86] (1984) growth of urban population in developing countries acquires serious proportions, the study of urbanization and its relationship to development is attracting greater and more critical attention of researchers, planners and governments concerned. The problem is, however, enormously complex and of a multifaceted nature mentioned above. It is not amenable to ethnocentric interdisciplinary analysis. As a consequence, the theories pertaining to urbanization and development are still in their infancy. According to them, urbanization in the Third World countries is characgerized by an overwhelming functional dominance of the large metropolitan cities over the national space. Over-concentration of population

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85. Cited in Stanislan H. Wellisz (1971), "Economic Development and Urbanization" in Leo Jakobson and Ved Prakash edited in Urbanization and National Development, vol.I, South and Southeast Asia Urban Affairs Annuals, Sage Publications, Beverly Hills, California, Chapter.2, p.39.

86. R.P. Misra and Nguyen Tri Dung (1984), "Large Cities : Growth Dynamics and Emerging Problems, in Development Issues of Our Time," R.P. Misra edited, Concept Publishing Company, New Delhi, 1984.

in large cities and the attendant problems of housing, infrastructure and social services, has led many scholars to claim that there is an increase "trend of over-urbanization" in these countries when seen in relation to their level of economic development[87].

Discussing about literature available on urbanization in Bangladesh, a very few studies have been done after independence. The literature on urbanization in Bangladesh as in many other Third World countries, can be categorized in two major classes.[88]

1 The spatial or areal expansion of "urban places" both in size and numbers is seen as the progress toward development of societies - the concept that bears the direct influence of so-called Western bourgeois ideology (Ahmed Patel[89], 1970; Elahi[90], 1972); and

2. The demographic increase of urban inhabitants via natural increase and rural to urban migration is

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87. Davis, Kingsley, and Hilda Hentz Golden," Urbanization and Development of Pre-industrial Areas", Economic Development and Cultural Change, 3: 6-24.

88. R.H.Chowdhury (1987), "Urbanization in Bangladesh, Centre for Studies, Department of Geography, Dhaka University, Dhaka.

89. A.M. Patel (1970), "The Urban Centres of Each Pakistan", Oriental Geographer, Vol 14.

90. Maudood Elahi (1972), "Urbanization in Bangladesh: A Geo-demographic Study", in Oriental Geographer, Vol.16, 1972.

seen as the process of urbanization, but emphasis is given to the fact that the growth of these cities and towns is a"parasitic" type (Islam[91], 1974; 1976; Hasmat[92], 1974).

The urbanization or urban population growth analysis was first introduced by Elahi[93] (1972) after independence.His analysis was based on population distribution in urban places and the increasing feature of urban growth. In 1974, Islam[94] who analysed the rural-urban migration and the growth pattern in cities and towns. In 1973 Alamgir's[95] (1973), analysis was based on the problems of urbanization in Bangladesh. It is a macro-level study of urbanization. Alamgir[96] was also first introduced aresearch methodology on problems of urbanization in Bangladesh.

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91. Nazrul Islam (1974), "The State and Prospects of the Bangladesh Economy", in B.A. Robinson and Griffith (eds.), The Economic Development of Bangladesh with a Socialist Framework, London, p.1.

92. Cited in R.H.Chowdhury (1987), Op. Cit.

93. Maudood Elahi (1972) Op.cit. pp.1-5.

94. Cited in R.H. Chowdhury (1987), Op.cit.

95. M. Alamgir (1973), "Problems of Urbanization in Bangladesh", Dhaka: Bangladesh Institute of Development Studies (Mimeo).

96. M. Alamgir 1973, "Approaches Towards Research Methodology on Problems of Urbanization in Bangladesh", Research Report No. 15, BIDS, Dhaka.

Chowdhury's[97] (1980) analysis was based on the demographic distribution of classified towns. Therefore, this work reveals the temporal changes of urban population in classified towns from 1901 - 1981. Huda also identified the few largest urban centres of Bangladesh during his study period. He also stressed that the regional differentials in levels of urbanization and in the rate of urban growth tend to be related to regional variations in economic development. In his argument he analysed the factors which are affecting the urban population growth or urbanization.

Alam[98] (1987) in his paper tried to find out the relationship between spatial development and urbanization in the context of Bangladesh. This analysis reveals that concentrated growth of population in few big urban and regional centres is creating inequality in the spatial development of the country.

Khan[99] (1989) tried to find out the present state of affairs of urbanization and its impact on regional development. He tried to identify the basic problems of urbanization with respect to socio-economic characteristics and he

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97. Rafiqul Huda Chaudhury (1980), "Urbanization in Bangladesh, Centre for Urban Studies, University of Dhaka.

98. Shamsul Alam (1987), "Urbanization and Spatial Development in Bangladesh", The Rajshahi University Studies (Part B) XV: 123-136.

99. M. Moazzem Hossian Khan (1989), "Urbanization in Bangladesh: A Socio-Economic Analysis," Journal of the Bangladesh National Geographical Association, 1989 Vol. 17, Nos. 1&2, BNGA, Dhaka, pp.125-143.

recommended that urban development should be controlled by the government as planned development in all the sectors of the economy.

Mohit's[100] (1989) argument was based on small and Medium town development in Bangladesh. He holds that if proper policies are adopted by the government for the development of intermediate urban centres within appropriate socio-economic and spatial framework, they would play the role of a harbinger in the regional development in Bangladesh.

Rumis [101] (1989) work was based on the small towns and their role in the regional development in Bangladesh. He tried to find out the contribution of small towns in regional development. He stressed in his paper that the proper functioning of the small towns along with the development of their hinterland will play a tremendous role in the regional development of Bangladesh in future.

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100. Mohammad A Mohit (1989), "Regional Development & Urban Growth in Bangladesh: A case for Small and Medium Town Development" Journal of the Bangladesh National Geographical Association, 1989, Vol. 17, Nos. 1&2. BNGA, Dhaka. pp. 125-143.

101. Syed Rafiqul Alam Rumi (1989), "Role and Characteristics of Small Towns in Regional Development of Bangladesh", Journal of the Bangladesh National Geographical Association, 1989, Vol. 17, Nos, 1&2, BNGA,Dhaka, pp.158-165.

Islam[102] (1992) focused in his paper on the development of physical, socio-economic and cultural environment of individual cities and towns in Bangladesh. His basic emphasis is that planned urban development, i.e.proper physical growth of cities takes place with efficiency, economy and beauty; intra-urban socio-economic inequalities are reduced and the lot of the poor is improved. This work here has been made with some recommendations on various relevant aspects of urban planning and management.

Sharif[103] (1992) analysed the regional structure of Bangladesh with the help of scientific method. His study was an attempt to delineate and articulate economic regions in terms of development patterns so as to aid the formultion of the spatial basis for future economic development.

Sultana[104] (1993) argues in her paper that the failure of a balanced urban development in Bangladesh has resulted in the excessive pressure on the elements of urban structure in the large urban centres and hindrance to their proper

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102. Nazrul Islam (1992), "Urban Environment and Future Strategies for Urban Development," in K.M. Elahi, A.H.M.R. Sharif and A.K.M.A. Kalam, (eds.) Bangladesh:Geography Environment and Development, Dhaka: BNGA.

103. A.H.M.R. Sharif (1992), "Regional Structure of Development in Bangladesh", in K.M. Elahi, A.H.M.R. Sharif, and A.K.M.A. Kalam (eds.) Bangladesh: Geography, Environment and Development, Dhaka: BNGA.

104. Sabiha Sultana (1993), "The Growth of Urban Population and Urbanization in Bangladesh," Institutional Symposium Paper on Population Growth in Developing Countries, New Delhi, 20-24 December.

functioning. She suggests that these require utmost attention for proper regional planning and development for the purpose of uniform and balanced development of urban centres in the country of Bangladesh.

Reviewing the literature available on the relevant study, it is found that very few study has been done and they have been found inadequate. Specially in regional levels of Bangladesh few studies have been done and even these studies do not reflect the overall pattern of the country.

Thus in the present study we have tried to find out the levels of regional development and their impact on urbanization by taking some economic and demographic variables.

1.3.0 Objectives of the Study

Urbanization is a natural and inevitable consequence of economic development. At the national level the cause of urbanization are now well understood. Economic development and urbanization are interrelated and interdependent on each other, so the major thrust of the study is to find out the relationship between economic development and urbanization in Bangladesh.

In order to achieve this purpose, the broad objectives have set up for the study, are:

1. to analyse the spatio-temporal pattern of urban growth in Bangladesh, 1951-81.
2. to analyse the spatial-structure and levels of economic development in Bangladesh between 1970's and 1980's;
3. to examine the relationship between level of economic development and urbanization as manifested in spatial structure, for the 1970's and 1980's (it is not possible to compare the 1950's and 1960's as data are not available).

1.4.0 **Data Base and Methodology**

The present study is mostly based on the analysis of 1981 census data of Bangladesh, supplemented where necessary, by information drawn from 1951, 1961, 1974 censuses (the census of 1971 could not be conducted due to the Liberation War and was conducted in 1974), 1981 census data and other relevant sources.

The study will be based also on relevant publications, books, journals, published references, statistics and information from the secondary sources, previous research and government office records if any. The census data of 1981 have been extensively used for examining the economic situation and the levels of development of urban centres and the overall economic condition of the country.

The study has been based on selected urban centres, i.e., former district towns (municipal towns/urban centres).

The former category has an administrative framework and a strong data base and hence these have been selected for the analysis (Map-1). The municipal towns that existed in Bangladesh in 1951 were selected for analysis. The selected urban centres represent cross-section of samples based on variation of urban population. Thus a comparative approach through size variation and resulting variation in other aspects has been adopted for finding meaningful results from the analysis of the study. In this study the selection of indicators of economic development has been largely determined by usefulness of the indicators as well as by the availability of statistics.

In order to presecute a complete picture of the levels of economic development of the districts of Bangladesh a number of quantitative tools have been utilized. Broadly, these include;

1. indicators of socio--economic development.
2. indicators of level and process of urbanization

The data for the present study was arranged under two categories;

1. Demographic aspects, and
2. Development aspects.

1. **Demographic Aspects** In order to get a complete picture of urbanization in Bangladesh, the process of urbanization and the intensity of urbanization have been analysed. To obtain a measure for the composite index and

intensity of urbanization process the indicators are:

i. Total population in thousands, 1951, 1961, 1974, and 1981: [X_3]

ii. Density of population for 1951, 1961, 1974 and 1981 [X_4]

iii. Percentage of urban to total population (regionwise) for 1951, 1961, 1974 and 1981 [X_5].

2. **Development Aspects:** For the purpose of analysing the levels of economic development the indicators selected are:

i. Percent of urban centres of the region to the total urban centres of the country (above 5,000 population); 1974 and 1981 [X_6]

ii. Ratio's of urban industrial concentration by region; 1974 and 1981 [X_7]

iii. Percentage of workers to total population by region; 1974 and 1981 [X_8]

iv. Percapita GDP (at Factor Cost) in Taka by region; 1977-78 and 1981-82[X_9]

v. Percent share of GDP from Agricultural Sectors (at c.m.p.) by region; 1977-78 and 1981-82 [X_{10}]

vi. Percent share of GDP from Industrial Sectors (at c.m.p.) by region; 1977-78 and 1981-82 [X_{11}]

vii. Percent share of GDP from Service Sector (at c.m.p.) by region; 1977-78 and 1981-82 [X_{12}]

viii. Percapita value added (in Taka) from Agriculture (at c.m.p.) by region; 1977-78 and 1981-82 [X_{13}]

ix. Intensity of cropping (in thousand acres) by region; 1974-75 and 1981-82 [X_{14}]

x. Regionwise average daily wage of agricultural labour (Taka per day); 1974-75 and 1981-82[P_{15}].

xi. Hospital Bed per lakh population by Region lakh population by Region: 1961 and 1981-82 (1970's data are not available. (X_{16}]

xii. Telephones per lakh population by region; 1974-75 and 1981-82 [X_{17}]

xiii. Post offices per thousand population (in numbers) by region; 1974 and 1982 [X_{18}]

xiv. Adult lkteracy rate (in percentage) by region; 1974 and 1981 [X_{19})

xv. Secondary school attendance per thousand population (aged 11-16 years); 1974 and 1981-82 [X_{20}]

Those data can be obtained from the following main census tables [Demographic aspects (e-h) and Development aspects (a-d)]

a. census of Pakistan, 1951, East Bengal Tables, Economic characteristics, Vol. 8;

b. Census of Pakistan, 1961, East Pakistan Tables,

i. Non-agricultural Labour force for East Pakistan, Vol. 5.

ii. Economic characteristics, Bulletins-5;

c. Bangladesh Bureau of Statistics, (BBS), Bangladesh Population Census, 1974, "Economic charac-teris-tics", National Volume.

d. Bangladesh Bureau of Statistics,(BBS), Bangladesh Population Census, 1981 "Economic characteristics, National Volume.

e. Census of Pakistan, 1951, East Bengal Tables and East Pakistan Tables, 1961:

i. Population Census Report and Tables for East Pakistan, 1951, Vol. 2 and Vol. 3;

ii.Population Census Report and Tables for East Pakistan, 1961, Vol. 2;

f. Bangladesh Bureau of Statistics, (BBS), Bangladesh Population Census, 1974, National Volume and District Reports;

g. Bangladesh Bureau of Statistics, (BBS), Bangladesh Population Census, 1981:

i. District Reports.

ii. Analytical Findings and National Tables,

h. Bangladesh Bureau of Statistics,(BBS), Statistical yearbook of Bangladesh, 1980; 1984-85, 1986..lm 1

For the purposes of the development and demographic analysis, different methods are used. Simple Correlation Coefficient Matrix has been made to find out the degree of relationship among the economic indicators at the district level.

To see the overall spatial structural development, Composite Index Regionwise has been constructed for 1970's and 1980's by giving weightage to different ndicators. The

weightages were given by the method of Principal Component Analysis(PCA)

Districtwise Stepwise Multiple Regression has been applied for 1970's and 1980's to identify the explanatory variables for urbanization, urban growth and regional economic development.

The indicators have been made scale free by dividing each by its mean. The standardised scores obtained have been aggregated for each region to represent the intensity of urbanization. Composite index of urbanization and represent the intensity of urban process and level of development and also to compute the economic development. Thus the composite index for the regions have been obtained as,

$Ci = \sum_{J}^{m} X_{ij} / X_j$, where '$X_{ij}$' is the value for the regions, jth indicator and 'X_j' is the mean of the jth indicators.

The above methodology is considered useful to meet the requirements of the study, in view of the availability of data and time allowed for this study. An integration of two different aspects of urbanization and economic development at regional levels is a research area still not throughly explored in Bangladesh.realm in Bangladesh has been reflected in the study.

1.4.0 Organization of the Study :

The whole study has been divided into six chapters. All six chapters are divided into sub-chapters. The following theme and issues have been discussed and critically analysed.

Chapter I will discuss the introductory part of the problem, conceptual background of the problem, which will focus on the economic development and its implications for the process of urbanization at the regional levels. This chapter will also discuss the related literature on developed and developing countries and Bangladesh. This chapter also deals with the objective, data base and the methodology of the study.

Chapter II has been devoted to the discussion of the geographical and macro-economic scenario of Bangladesh. Issues like the economic growth, structural change and demographic profile of Bangladesh have been discussed.

Chapter III focuses on the analysis of the various features of the regional pattern and process of urbanization in Bangladesh during 1951-1981. It deals with the spatial patterns and process of urbanization and the structural patterns of urbanization at regional levels in Bangladesh.

Chapter IV deals with the different levels of economic development based on the sixteen indices selected for the 1970's and 1980's separately. A comparative analysis of

economic development by Principal Component Analysis for those periods has also been made.

The Relationship between Economic Development and Urbanization has been analysed in Chapter V. An attempt has been made to establish the possible inter-correlations between the process of urbanization and economic development. It deals with the relationship between levels of economic development for the 1970's and 1980's and levels of urbanization for 1974 and 1981. It also deals with variability in the urbanization process for 1974 and 1981 and the economic development variables for the 1970's and 1980's.

The major findings of the study and the conclusion are presented in Chapter VI.

The Geographical and Macro-Economic Scenario of Bangladesh

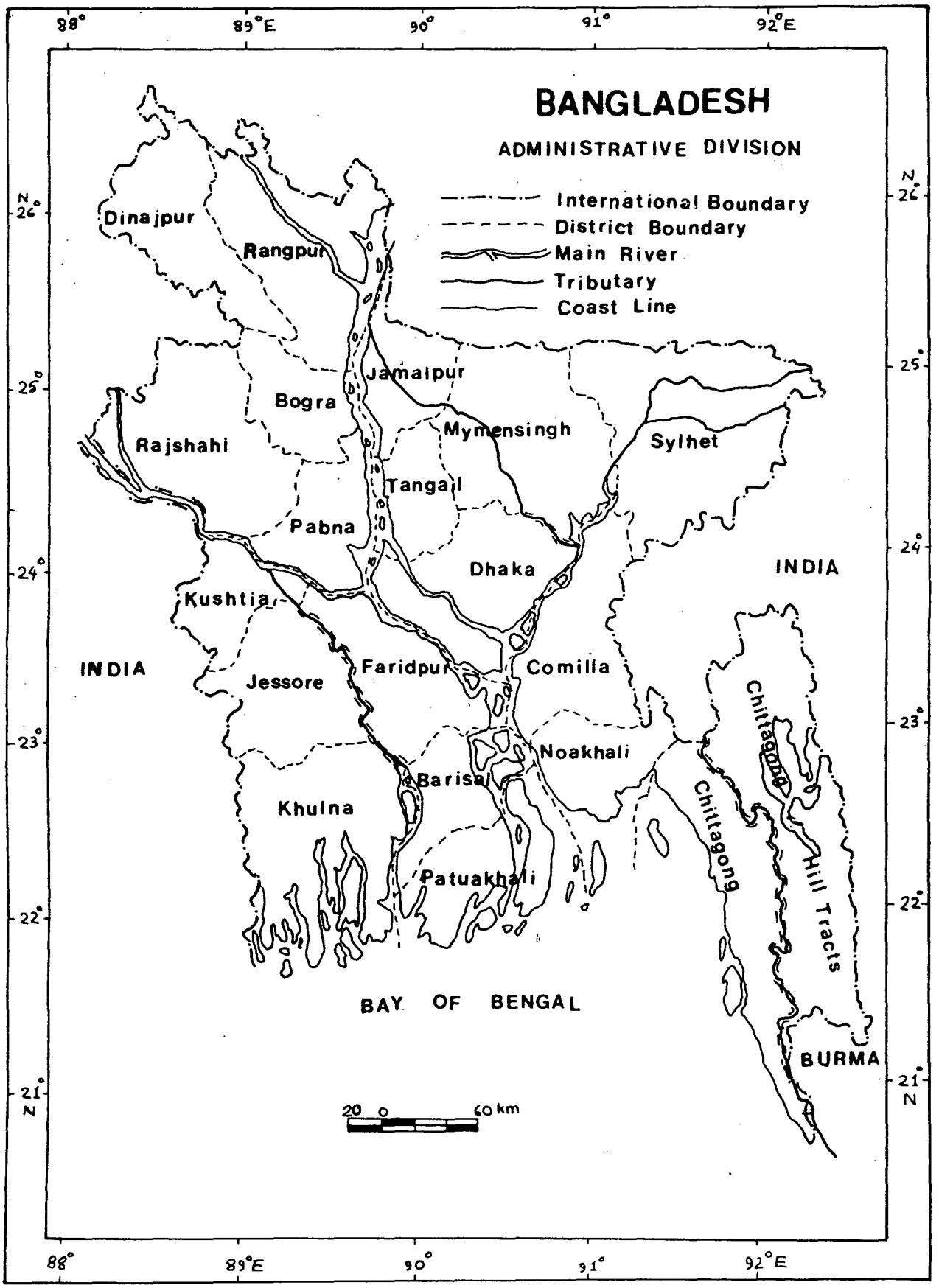
CHAPTER II

2.0 The Geographical and Macro-Economic Scenario of Bangladesh

2.1 Bangladesh : The Geographical Setting :

Bangladesh is newly born country with an area of 143,888 sq. kilometers. It is one of the world's most densely populated areas inhabited by approximately 105 million people. It is ninth most populous country in the world, only recently pushed from the eigth rank by Nigeria. The territory that constitutes Bangladesh came under British rule in the mid-eighteenth century along with the rest of eastern India. In August 1947, as a consequence of the independence and partitioning of British India the present political boundary of Bangladesh (former name East Pakistan) was drawn for the first time. In 1971, following the bloody war of Liberation it was separated from Pakistan and Bangladesh was born as a new nation of the United Nations.

Bangladesh lies in the north eastern part of South Asia between $20^{o}34'$ and $26^{o}38'$ north latitude and $88^{o}01'$ and $92^{o}41'$ east latitude. The country is bounded by India on the west and the north; by India and Burma on the east and by the Bay of Bengal on the south. The limits of territorial waters of Bangladesh are 12 nautical miles and the area of the high seas extending to 200 nautical miles measured from the base lines constitutes the economic zone of the country. (Map.2.1)


BANGLADESH
ADMINISTRATIVE DIVISION
International Boundary
District Boundary
Main River
Tributary
Coast Line
Dinajpur
Rangpur
Bogra
Jamalpur
Rajshahi
Mymensingh
Sylhet
Tangail
Pabna
Dhaka
Kushtia
INDIA
INDIA
Jessore
Faridpur
Comilla
Noakhali
Barisal
Khulna
Patuakhali
Chittagong
Chittagong
Hill Tracts
BURMA
BAY OF BENGAL
20 0 60 km
88°
89°E
90°
91°
92°E
26° N
25°
24°
23°
22°
21° N

Map - 2.1

The country consists mainly of low, flat and fertile land, except the hilly region in the north-east and south-east and some areas of high lands in the north and western part. A network of rivers of which the Padma, the Jamuna, the Teesta, the Brahmaputra, the Surma, the Meghna and the Kapnaphuli are important. They number about 230 with a total length of about 24140 k.m. covering the country down to the Bay of Bengal. The alluvial soil is thus continuously being enriched by heavy silts deposited by rivers during the rainy season.[1] The surface deposits of the country are of three agesn[2] : (1) The Hilly Areas of the north, north-east and southeast of the country are of Tertiary Age, which include eastern and southeastern and northern parts of Sylhet district including southern part of Habiganj, Chhatak and Sylhet hillocks; Lalmai hills of Comilla, and the northern border of Mymensingh and Jamalpur districts, the lower part of the Garo, Khasi and Jainta hills, and secondly, Chittagong hill districts and part of Chittagong; (2) The Madhupur Clay of Pleistocene Age includes the Barind Terrace and Madhupur Terrace areas of the old alluvium of the ancient Ganges - Brahmaputra system during the Pleistocene period; and (3) The rest of the country is the Plainland which is formed during the Recent Age.

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1. For a detailed discussion on topography of Bangladesh, see the introduction of the Statistical Year Book of Bangladesh (BBS, 1991).

3rm60

2. Sabiha Sultana, (1993) "Rural Settlements in Bangladesh - Spatial pattern and Development", Graphosman, Dhaka, p.30

The most characteristic physical feature of the country is its river system which has not only a dominating role in the development of the country but also in the way of life of the people. The geography of Bangladesh thus has been conditioned by its river systems. The riverine in districts are the economically developed districts than others. Most business centres are situated by the banks of the rivers, covering the districts of Dhaka. Chittagong, Khulna, Rajshahi, Kushtia, Pabna, Jessore, Noakhali, Sylhet, Faridpur, Barisal and so on.

There are three distinct types of soils in Bangladesh derived mostly from tertiary rocks, pleistocene sediments and recent deposits. They are respectively hill soils, red soils and alluvial soils. Alluvial soils are the most widespread in the territory of Bangladesh. The forest area of Bangladesh covers about 14% of the land area. The country produces sufficient quantities of quality timber, bamboo, and cane. The main forest zones are the Sundarbans or mangrove tidal forests in the south-west, wet tropical forests of south-east and Madhupur forests of Dhaka - Mymensingh districts. Sundari trees grow in the Sundarbans located in the south-western part of the country bordering the Bay of Bengal. Plantation of rubber in the hilly regions of the country was undertaken recently and extraction of rubber had already started. Bangladesh has a few proven mineral resources. The country has enormous deposit of natural gas. So far, 13 gas fields have been discovered from

which natural gas is available for power generation, industrial and other domestic uses. Fertilizer factories in operation including the petro-chemical complex at Ashuganj and those to be set-up are and will be using sizeable quantity of natural gas. Coal deposits have been found and efforts are under way to exploit them with international assistance. Electricity is produced by both thermal and hydro-electric processes. The total generation of electricity amounted to 4545 million kilowatt hours in 1984-85. The solitary hydro-electric project having installed capacity of producing 130 m.w. electricity is located at Kaptai in the Chittagong Hill Tracts.

Bangladesh enjoys generally a sub-tropical monsoon climate. While there are six seasons in a year, but summer and monsoon are prominent. The maximum temperature recorded in summer months 36.66 celsius (98^{o} F) although in some places this occasionally rises upto 40.55 celsius (105^{o} F) or more. Monsoon starts in June and stays upto October. This period accounts for 80 per cent of total rainfall. The average annual rainfall varies from 119.38 to 145.44 centimetre (47" to 136"). The maximum rainfall is recorded in the coastal areas of Chittagong and northern part of Sylhet district. While the minimum is observed in the western and northern parts of the country[3]. Bangladesh has recently been

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3. GOB, (1986) "Statistical Year Book of Bangladesh, BBS 1986, p.4

subject to frequent floods and cyclones including tidal surges when in some areas particularly the coastal belt the wind speed damaged the human settlements. Tidal surges caused by cyclones played havoc in the coastal belt resulting in great human tragedy over and above the loss of properties and life in the affected areas in the year 1960,1961, 1965, 1991. The country suffered by floods in 1974, 1980, 1988 and 1989. Therefore thousands of people died and it caused damage of houses and property.

2.2.0 Economic Growth and Structural Change in Bangladesh:

This sections provides a macro-economic back ground for the analysis of development experience in Bangladesh since independence and compares it with South-Asian countries. It begins with a discussion of the economic growth, manpower, the trends in the growth of national income, structure of production and the trends in growth of national income, structure of production and their sectoral distribution of production in major productive sectors.

2.2.1. Economic Growth :

The South Asian countries are characterized by low levels of per capita incomes and low rates of economic growth. The world Bank in World Development Report 1984 classified low income countries as those having per capita income below 400 U.S. dollars. Judged by this criterion, all South Asian countries may be classified as belonging to this category. This should not obscure the fact that some coun-

tries in South Asia, Nepal, Bhutan and Bangladesh are among the lowest rung of low income countries[4]. On the other hand it is interesting to note that all South-East Asian countries except Thailand, had an average annual per-capita growth rate of below 2 per cent during 1985-87, while three major South Asia economies. India, Pakistan and Srilanka, had an average per capita growth rate above 2 per cent. The two major South Asian least developed countries, Bangladesh and Nepal, however, had per capita income growth significantly lower than 2 per cent. Bangladesh had a per capita income growth rate of 0-1.9 per cent during 1985-87 [5] In Bangladesh in 1986/87 the rate of growth of GDP, at 4.5% per cent, was well below the target rate of 5.2 per cent. This was largely due to the depressed export prices for the countries sluggish performance in the industrial sector. Economic growth in Bangladesh averaging about 4.4 per cent per year so far in the 1980's, seems satisfactory when compared with low-income countries.

Whereas the United Nations had set a target growth rate of 6 per cent per annum in the real GDP for developing

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4. For detailed in I.N. Mukherji (1986), "Economic Growth and Social Justice in South Asia: Growing Potential for Domestic Conflicts", in Domestic Conflicts in South Asia, Urmila Phadnis, S.D. Muni, Kalim Bahadur edited, Economic and Ethnic Dimensions, South Asian Publishers, New Delhi, pp. 1-2.

5. For detailed in Statistical Year Book for Asia and the Pacific, 1989, United Nations/, ESCAP, Bangkok, Thailand, UN Publications Sales No.F/F.86.II/F.24

countries during the first development decade. It will be seen in none of the South Asian countries (with the exception of Pakistan during the sixties) this target was realized. Assuming a growth rate in population of around 2.5-3 per cent per annum in these countries, in only three countries, viz., India, Pakistan and Srilanka, the growth in real GDP exceeded population growth. However, in other three countries, viz., Bhutan, Bangladesh and Nepal, the long-term rate in GNP per capita has been quite stagnant. While the growth rate in GDP in Srilanka has been lower than that of Pakistan, both the countries have achieved similar improvement in GDP per capita.[6] In current dollar terms the flow of ODA (Official Development Assistance) to Bangladesh, the largest aid recipient among the least developed countries of the region, remained stagnant of around 1.2 billion dollars for most of the 1980-86 period. However, there was a sharp downturn in 1983. If we see the ODA to Bangladesh during 1980-86, we find that the ODA flows are 1212.3, 1047.6, 1220.2, 970.4, 1186.6, 1142.0, 1373.4 for the 1980, 1981, 1982, 1983, 1984, 1985, 1986 respectively[7]. It will also be noticed that most South Asian countries including Bangladesh were characterised by substantial fluctuations in their growth rates. This has been mainly due to fluctuations

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6. Op.cit in 1, P.5

7. For detailed in Organization for Economic Cooperation and Development, Geographical Distribution of Financial Flows to Developing Countries, Urban Issues in Statistical Year Book for Asia and the Pacific, 1989, United Nations, ESCAP, Bangkok, Thailand, P.35 and 44.

in agricultural output caused by vagaries of monsoons. We can also observe that the rate of growth among the relatively developed South Asian countries has been better as compared to least developed countries like Bangladesh, pointing to growing polarization between those countries. An analysis of the growth of GNP and GDP in South Asian countries during the period 1950 to 1982 and 1960-1982 is given in Table - 2.1 and Table - 2.2 respectively.

As may be observed in Table-2.1, the period covering

Table : 2.1

Distribution of Gross National Product (c.m.p) and its Various Derivatives for the South Asian Countries, 1950-82 (in U.S. Dollars)

Countries	Average Annual Growth Rates			GNP per Capita (Percent per year)		Per Capita Income, 1982
	1950-60 (1)	1960-70 (2)	1971-82 (3)	1960-78 (4)	1960-82 (5)	(6)
Bangladesh	N.A.	N.A.	5.7[a]	-0.4	0.3	140
Bhutan	N.A.	N.A.	N.A.	-0.3	0.1[b]	80[c]
India	3.5	3.8	2.7	1.4	1.3	260
Pakistan	2.5	5.4	4.1	2.8	2.8	380
Nepal	N.A.	2.6	2.7	0.8	-0.1	170
Srilanka	3.0	4.5	5.5[d]	2.0	2.6	320

Source : ESCAP, Economic and Social Survey of Asia and the Pacific 1974, 1977, 1978 for col.1-2; Asian Development Bank, April 1983: Key Indicators, for col.3; World Development Report, 1980 and 1984, for col.4 and col.5, col.6.
[a=1974-82, b=1960-61, c=1981, d=1971-81]

the fifties was one of generally low growth rates. In GDP for all South Asian countries. The Sixties was characterised by some acceleration in growth rates particularly in Pakistan and Srilanka. The Seventies was characterised by deceleration in growth rates in most of these countries. The most important finding that emerges from the above table is that all countries in South Asia except Pakistan had in 1982 a per capita GNP of less than US dollars 380. Three countries namely, Bangladesh, Bhutan, Nepal had a per capita GNP of less than 170 US dollars. The low levels of per capita income in South Asia are inadequate for the provisions of even bare necessities of life. In view of the uneven distribution of incomes, the incidence of object poverty in these three countries is very high. In these countries the rates of growth of per capita GNP have been negative as in Bangladesh (-0.4 per cent for 1960-78 period) and for the study 1960-82 it grew slightly (0.3 per cent), whereas in Bhutan it was 0.1 per cent for Nepal 0.1 per cent and India 1.3 per cent. This means the living conditions of the people in the two countries (Bhutan and Nepal) were getting worse and in the other two (India and Bangladesh) improving marginally. Pakistan and Srilanka, however, had registered an average annual growth rate of 2.8 and 2.6 per cent respectively during 1960-82, which is not too bad. The unsatisfactory situation in all these countries is largely the result of low rates of economic growth accompanied by high rates of population growth.

A number of important conclusions emerge from Table-2.2 First the growth rate of GDP during 1970-78 in all countries except Srilanka was only marginally higher than the rate of population increased (see column 4 in the above table). Second, excepting Nepal, the growth rates in GDP in the 1960s were higher than the growth rates during 1970-78. The deceleration in the growth rates of GDP during 1970's coupled with no marked slow-down in the rates of population

Table:2.2
Rate of Growth of GDP (1960-79) of the South-Asian Countries by Country (in percentage change per annum)

Country	Bangladesh	India	Pakistan	Nepal	Srilanka
Year					
1960-65	4.6	3.7	7.4	2.5	3.8
1965-70	3.3	4.7	7.2	2.6	5.7
1970-78	2.9 (2.7)	3.7 (2.0)	4.4 (3.1)	2.7 (2.2)	3.4 (1.7)
1973-74	4.7	3.7	8.4	2.0	6.0
1974-75	11.1	0.2	1.4	6.4	0.4
1975	2.5	8.9	6.9	2.5	3.6
1976	9.2	1.6	3.3	4.4	3.0
1977	1.7	7.2	2.5	3.2	4.2
1978	7.9	4.3	7.0	N.A.	8.2
1979	4.0	1.5	5.9	2.5	5.2

Source : World Development Report, 1980 for 1970-78, Table 2, p.112, the figures in parenthesis in 1970-78 are for population growth rates from Table 17, page 142; For 1960-65, 1965-70, 1973-74 and 1974-75 from E/ESCAP/L 26, 15 January 1979, Table 1, p.25. Others for 1975, 1976, 1977, 1978, 1979, from E/ESCAP/L. 44, 1 February, 1980, Table II.1, p.26.

growth has meant a stagnation of per capita incomes in South Asia. Third, the slow rates of growth in GDP during 1970's have been accompanied by large year-to-year fluctuations in most countries of these region. In the case of India, low growth rates of 0.2 per cent in 1974-75, 1.6 per cent in 1976-77 and 1.5 per cent in 1979 and high rates of 8.9 per cent in 1975-76 and 7.2 per cent in 1977-78 are indicative of the year-to-year variations. The fluctuations in the rate of growth were least in the case of Nepal. The range observed was from a low rate of 2 per cent in 1974-75 to a high rate of 6.4 per cent in 1975-76.

The wide fluctuations in the rates of growth were due to combination of factors. Adverse weather had affected the production levels in the agricultural sector in some years for South Asian countries. The current economic situation in these region is characterised by the persistence of the problems of low rates of economic growth, high rates of population growth, heavy pressures of population on land, scarcity of natural resources. High incidence of poverty, income inequalities, illiteracy and infant mortality, low expectation of life at birth, lack of safe water supplies for huge proportions of population, food shortages inspite of the predominance of agriculture in the economies of the regions are prime factors halting the rate of growth.

There are considerable variations in the economic situation of South Asian countries. It varies within the

countries with respect to time. In the case of Bangladesh, Table-2.3 assembles time series on GDP, GNP, population and per capita GDP and GNP since 1949/50. While the basic series are the ones prepared by the Bangladesh Bureau of

Table: 2.3

National Income, Population and Per Capita income, Bangladesh (1949/50-1986/87)

Year	GDP	GNP	Population	Per Capita GDP	Per Capita GNP
1949/50	27233	27189	42.2	645	644
1951/52	29660	29635	44.3	670	669
1953/54	31845	31882	46.5	687	686
1955/56	28823	29884	48.8	613	612
1957/58	32454	32444	51.2	634	634
1959/60	34134	34083	53.8	634	680
1961/62	38535	38501	56.6	681	680
1963/64	42881	42760	59.7	718	716
1965/66	45041	45053	62.9	716	716
1967/68	48500	48512	66.5	744	745
1969/70	51833	51840	70.6	734	734
1973/74	49073	49225	76.4	642	644
1975/76	55372	55539	79.9	693	695
1977/78	60240	60772	83.7	720	726
1979/80	63586	64763	87.6	726	739
1981/82	68460	70034	92.1	743	760
1983/84	73804	76511	96.8	762	790
1985/86	78792	82831	104.7	785	809
1986/87	83292	86523	104.1	800	831

Source: BBS, Time Series on Population, 1986[8].

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8. GDP and GNP are in millions of Taka at 1972/73 prices.

GDP and GNP estimates which are based on an upward adjustment in value added in manufacturing in the BBS series. It has been alleged by some critics that this component of the BBS estimates has been underestimated in recent years[9].

Table: 2.4

Trend Growth Rates - Per Cent Per Year.[10]

	Per-independence Period (1949/50-1969/70)		Post-independence Period (1972/73-1986/87)	
	GDP	GNP	GNP	GNP
GDP/GNP	3.20	3.21	4.05	4.34
Per Capita GDP/GNP	0.66	0.66	1.64	1.93

Source : A.R.Khan and M.Hossain "The Strategy of Development in Bangladesh", Macmillan, 1989, p.22.

Table-2.4 shows the estimates of trend rates of growth in these various series for the pre-independence (1949/50-1969/70) and post-independence (1972/73-1986/87) periods. During the two decades before independence, the rate of growth of GDP was about 3.2 per cent per year. Much of this growth was offset by the increase in the population which

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9. See, W.I., Abraham, "Manufacturing Output and the Industrial Production Index", Industrial Statistics Improvement Unit, Dhaka, 1984 (mimeographed) and World Bank", Bangladesh: Recent Economic Developments and Medium Term Prospects", Vol.I, March, 1986.

10. See details in Azizur Rahman Khan and Mahabub Hussain, (1989), "The Strategy of Development in Bangladesh", Macmillan, OECD Development Centre, 1989, p.22.

grew at an average annual rate of over 2.5 per cent (the rate was lower in 1950s and higher in the 1960s). The annual increase in per capita income averaged 0.66 per cent. During post-independence period, GDP grew at a significantly faster rate over 4 per cent per year. The corresponding annual rate of growth in per capita GDP was 1.64 per cent, i.e., almost two-and-a-half times as fast as in the pre-independence period. The pre-independence peak per capita GDP (in 1968/69) was not equalled again until 1980/81. Had GDP continued to grow at the pre-independence rate (avoiding the fall immediately after independence), per capita GDP in 1986/87 would in fact have been higher than it actually was. The growth rate in GNP was above three-tenths of a percentage point higher per year than the growth rate in GDP during the post-independence period[11].

To summarize, during the two decades before independence, the economy of what is now Bangladesh grew rather slowly, averaging about two-thirds of percentage point per year in per capita terms. Since independence, the rate of growth has been about two and a half times as fast as in the pre-independence period. At the time of independence there was a sharp fall in income and consequently much of this higher growth represents a catching up with the pre-independence peak. If one were to extrapolate the independence period, the predicted per capita income for 1986/87 would be

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11. Ibid, p. 22-23.

higher than the actual level of income.

Like many other developing countries in the SAARC region, Bangladesh began in the early 1980's to pursue private sector development actively, and as part of this strategy it encouraged foreign direct investment (FDI) in urban sectors. Previously, the emphasis given to public enterprises had severely limited the private sectors growth. Foreign joint sector ventures were limited to a minority in public companies. However, in 1982 the government reversed this policy and gave priority to private sector development. To attract more diversified investment Bangladesh may require another form of comparative advantage, as it did with natural resources in agro-processing and metals and quotas with garments. In addition, the extent of infrastructure development and political stability are important factors in the investment decisions of transnational corporations.

2.2.2 : Savings and Investment :

The rates of savings and investments in the South-Asian countries have not been commensurate with the requirements of their economies. We have the knowledge that the future prospects of the economies of these countries can not be satisfactory unless the saving rates are increased for the bulk of investments in any case has to be financed by domestic savings.

The most interesting aspect is perhaps the study of the

relative importance of saving and foreign capital in total domestic fixed investment in Bangladesh. Over the entire period, Bangladesh contributed over 70 percent toward investment out of its own resources with the exception of 1960-61, and 1963-64. During 1960-61, the dependence on capital inflow was the highest in the periodas 35 percent of the total investment was financed through foreign capital inflow. It may be asserted that with the given level of domestic savings Bangladesh could perhaps have generated a higher rate of growth if a greater amount of external assistance had been available[12] (Table-2.5).

The investment rates have been very low in Bangladesh. Perhaps the most consistent series of investment estimates is due to the world Bank as reported in their country reports[13].

One can relate growth in total, private and public investment with the performance of the Bangladesh economy-both in the pre and post-liberation periods. In so far as investment is the key determinant of growth, one can expect,with some reasonable lags, a close correspondence between growth in the economy and the growth in investments.

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12. For detailed in M. Alamgir and L. Berlage (1974), "An Analysis of National Accounts of Bangladesh 1949/50 - 1968/69", New Series No. 7. Bangladesh Institute of Development Economics, Dhaka.

13. See World Bank (1985): Bangladesh: Economic and Social Development Prospects, Report No. 54.

From Table-2.7, which presents the compounds growth rates of the economy over different time periods. One can observe that contrary to the expectations of close correspondence between economic performance and investment, there is a rather poor correlation between the two Although in many

Table: 2.5

Bangladesh : Total Investment, Savings 1959\60 to 1968/69.[14]

Year	Total investment	Savings	Saving as % of Investment
1959\60	1294	1252	96.8
1960\61	1347	870	64.6
1961\62	1881	1534	81.6
1962\63	1945	1457	74.9
1963\64	2521	1724	68.4
1964\65	3171	2221	70.0
1965\66	2563	1827	71.3
1966\67	3481	2667	76.6
1967\68	3660	2798	76.4
1968\69	4181	3165	75.7

Source: Government of Pakistan statistical Year book 1968, Central Statistical Office, Karachi: Printing Corporation of Pakistan Press, 1970.p.330.

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14. The total Pakistan data were obtained from Statistical Yearbook 1968. However figures were available only for 1963/64 to 1967/68. For earlier years 1959/60 to 1962/63 the 1963/64 proportion was used and for 1968/69, the previous year 1967/68 proportion was used. For detailed in M. Alamgir, L. Berlage, Op.Cit. in 12, p. A10.

cases growth rates moved in sympathy with investment, for some other cases the movement is in the opposite direction. Put on the whole one can say that growth has been related positively with the level of investment[15].

Although the world Bank has also resorted to frequent revisions of their estimates, their latest investment estimate (as presented in Table-2.6), which includes both public expenditure on food for work (FFW) and net changes in food stocks, shows that public investment in Bangladesh has increased by about 347 percent between 1974-75 and 1983-84. At current prices, it increased from 5102 million taka in 1974-75 to about 22831 million taka in 1983-84. Public investment accounts for about a half of total investment, the share increased in the late seventies and the early eighties to about 58 percent of total expenditure :

Despite the increase in FDI, Bangladesh did not always realize the expected benefits of technology transfer improved skill levels, and improvement in its balance-of-payments position. For example, investments from Hong Kong and the Republic of Korea were instrumental in developing Bangladesh into the fifth largest exporter of ready-made

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15. See, Atiq Rahman and Chowdhury Saleh Ahmad, (1989), "A Study on the Impact on Public Investment on Output and Employment in Bangladesh", Bangladesh Institute of Development Studies (BIDS) Dhaka, may 1989, pp. 15-19.

clothes to the United States.[16]

Table: 2.6

Public and Private Investments in Bangladesh: World Estimates, at Current Market Prices: 1974/75-1983/84[17]

Years	Private Investment (in taka)	Public Investment (in taka)	Total Investment (in taka)	Public Investment as a % of Total Investment
1974/75	5091	5102	10193	50.1
1975/76	6102	5056	11158	45.3
1976/77	5664	4935	10599	46.6
1977/78	7454	9049	16503	54.8
1978/79	9004	9809	18812	52.1
1979/80	12424	17786	30210	58.9
1980/81	13941	19784	33725	58.7
1981/82	15215	15229	30444	50.0
1982/83	19309	22104	41413	53.4
1983/84	23386	22831	46217	49.4

Source: World Bank (1985): Bangladesh-Economic and Social Development Prospects, Vol. IV, Statistical Appendix, Table 2.4

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16. See, Economic and Social Survey of Asia and the Pacific 1989, UN/ESCAP (Economic and Social Commission for Asia and the Pacific, Thailand), p.160.

17. Ibid, p. 16, Table. 1.

Table 2.7

Compound Growth Rates of GDP and of Different Sectors of the Bangladesh Economy

Sectors	Pre-Liberation Period		Post-Liberation Period		
	1949/50-1959/60	1960/61-1969/70	1973/74-1977/78	1977/78-1979/80	1979/80-1983/84
Agriculture	1.5	3.0	4.1	-0.1	2.8
Manufacturing	9.6	7.0	14.5	2.3	2.6
(a)Large Scale	19.3	6.8	11.5	3.0	1.1
(b)Small Scale	5.0	7.2	19.1	1.3	2.9
Construction	14.5	20.2	6.0	7.4	3.9
Utilities	12.8	25.2	19.6	15.3	7.8
Transport and communication	3.8	4.3	5.0	5.1	3.8
Trade	1.8	3.6	11.9	15.7	3.6
Services	2.7	4.3	3.7	6.4	4.0
G D P	2.3	4.3	5.3	3.7	3.0

Source: Atiq Rahman and Chowdhury Saleh Ahmed, "A Study on the Impact of Public Investment on Output and Employment in Bangladesh, BIDS, May 1989, Table. 2, p. 17.

The following Table gives the indicators of macro-economic performance. Bangladesh 1986-1991.[2]

The economy of Bangladesh had achieved a real GDP growth rate of 5.8 per cent in 1990 (2.8 per cent in 1989) with the aid of a 5.6 per cent growth in agriculture. Industry and construction sectors also recorded relatively high growth rates 8.4 and 9.0 per cent. In 1991, the GDP

Table :2.8

Rate of GDP Growth and Their Indicators of Macro-Economic Performance, Bangladesh, 1986-1991[18]

S.No.	Indicators	1986	1987	1988	1989	1990	1991
1.	Real GDP Growth	4.3	4.2	2.9	2.3	5.8	3.6
2.	Saving GDP	3.2	2.8	2.2	2.5	2.3	2.7
3.	Investment GDP	11.0	13.3	13.6	10.7	10.7	10.4
4.	Current Account Balance GDP	-8.1	-5.5	-5.8	-8.3	-5.6	-5.2[a]
5.	Budgetary Balance GDP	-7.6	-8.4	-7.2	-7.3	-7.6	-6.8
	M_1 growth	16.1	13.5	16.5	18.0	11.3	13.1
	Changes in CPI	8.7	8.8	9.4	6.2	9.0	8.9

Notes : M_1 = Currency in circulation plus demand deposits.
CPI = Consumer Price Index
a = Including official transfers

Sources : IMF, International Financial Statistics, Oct. 1991.

growth rate was reduced to 3.6 per cent, as growth in the agricultural sector fell to 2.4 per cent. Growth in the industrial and construction sectors also slowed to 7.9 and 5.1 per cent respectively.[19]

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18. Ibid, p. 33

19. Detailed in IMF, International Financial Statistics, October 1991, p.41.

2.2.3 : Structure of Production :

Structural Change is an essential element to the process of development. Historically, structural change has generally involved a decrease in the relative importance of agriculture and an expansion in the industrial production.

In the Bangladesh economy, the growth dynamics are caused by many factors, but two are most important :

1. Development efforts of the region : We have seen that the efforts of the region for technological progress in agricultural sectors could so far achieve only a limited success. The ultimate aims of all development programmes of the regions are to rapidly raise the rate of economic growth and to distribute the fruits of increased economic growth among the population as evenly as possible. In Bangladesh the state has been implementing a series of development programmes since late 1960s. The development efforts have been intensified since the late 1970s. These efforts have rapidly affected the intermediate variables. Infrastructure has considerably developed, use of family planning has substantially increased, and exposure and information of the people have greatly increased. The important infrastructural variables, namely, transport and communication, rural electrification, education, health and family planning, and banking have substantially changed. The rate of development of transport and communication and the rate of increase in the number of electrified villages are quite staggering.

While the facilities for education and health are also spectacular. The immediate effects of the changes in intermediate variables are quite good. A considerable structural change has taken place in the economy. Between 1972/73 and 1991/92, the share of agriculture in GDP has declined from 57.9 per cent to 36.6 per cent (the share of cross sub-sector alone has declined from 46.7 per cent to 30.30 per cent), the share of industry has increased from 10.1 per cent to 17.4 per cent, and the share of service sector has increased from 32.0 per cent to 46.0 per cent. In the service sector, three sub-sectors, namely, transport and communication, trade service and professional service subsectors have expanded most, there subsectors accounted for more than fifty per cent of the service sector in 1991/92. (Table-2.9 & 2.10).

From the ESCAP estimates we have also found that, between 1982 and 1991, the share of agriculture in GDP has declined from 48.8 per cent to 36.6 per cent. The share of industry has increased from 15.2 per cent to 17.4 per cent and the share of service sector has increased from 36.0 to 46.0 per cent. The respective growth rate in agriculture sector was from 0.9 per cent to 2.4 per cent, in industrial sector from 3.1 to 3.8 per cent and service sector from -0.2 per cent to 3.8 per cent (Table - 2.9). So, the growth rate in service sector is more than that of agriculture and industrial sectors.

Table : 2.9

Sectoral Distribution of GDP of Bangladesh (at constant prices), 1972/73-1980/81[20]

Years	Sectors (in percentage) Agriculture	Industry	Service
1972-73	57.9	10.1	32.0
1974-75	54.9	14.1	31.0
1976-77	51.9	14.0	34.0
1978-70	50.9	14.3	35.0
1980-81	48.8	14.2	37.0

Sources : World Bank, Bangladesh : Recent Economic Trends and Medium-Term Development Issued, Washington, March 4, 1983, pp. viii 114.

Table: 2.10
Sectoral Components of GDP and their Growth Rates, 1982-1991, Bangladesh

Year	Sectoral Shares (%)			Growth Rates		
	Agriculture (1)	Industry (2)	Services (3)	Agriculture (4)	Industry (5)	Services (6)
1982	48.8	15.2	36.0	0.9	3.1	-0.2
1983	49.2	14.8	35.9	4.6	0.6	3.5
1984	48.0	15.4	36.6	1.6	8.3	6.1
1985	41.7	15.8	42.3	0.9	6.2	6.3
1986	41.4	15.7	42.9	3.3	2.6	5.7
1987	39.8	16.3	44.0	0.4	8.1	7.1
1988	38.4	16.7	45.0	-0.8	5.3	5.3
1989	37.4	17.1	45.5	-1.1	4.8	4.7
1990	37.0	17.3	45.7	5.6	7.3	5.8
1991	36.6	17.4	46.0	2.4	3.8	3.8

Source : Economic and Social Survey of Asia and the Pacific, 1989, UN/ESCAP, Bankok, ESCAP report, p. 46, p.17. (for col.1-6, from 1982 to 1987); and Asian Development Bank : "Key Indicators of Developing Asian and Pacific Countries, vol.XXII (July 1991) and national sources (from 1988 to 1991).

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20. Figures on population have been separately estimated, using 1974 Population Census, National Volume, and Bangladesh Bureau of Statistics Publications.

2. In addition to the structural change brought about by the development efforts, some other effects are also discernible. The magnitude of increase in urbanization, if measured in terms of change in the percentage of urban population has increased from 8.78 per cent in 1974 to 15.18 per cent in 1981. Although the effects of development programmes on the intermediate growth variables are on the whole substantial, their effects on the proximate determinants of growth is much less pronounced. As shown in the above table of savings and investment, the percentage of savings has been fluctuating at a very low level, without showing any sign of increasing trend. The proportion of investment has been declining, even total investment has declined, declining, even total investment has declined. About 50 per cent of industrial units are sick less than 30 per cent capacity utilization.

2.2.3.1. **Agricultural Economy**

Bangladesh has always been and remains an agricultural economy, about half of its GDP being derived form agriculture (Table-2.10). It accounts directly for 70% of the economy-wide employment and in one way on the other for 90% of its merchandise exports. On the other hand, the importance of agriculture is that 90 per cent of the country's total foreign exchange is achieved from the export of agricultural products. So, the other two major sectors contribution (i.e. Industry and Service Sector) is less than that of the agricultural sector. But recently, there has been a

secular decline in the relative share of agriculture in GDP from about 58% to 37% between 1972/73 to 1991/92. Although under more usual circumstances this secular decline in the farm sector may have been seen as symptomatic of a favourable structural change, this is not to be done in the case of Bangladesh. For one thing, there is dependable evidence that in the 1970's official data about farm-sector output (certainly of price, pulses and vegetable, and perhaps of jute as well) have been understated[21] One reason for the decline of agricultural output may have to do with the distribution of the economy's development expenditure. Agricultures' share of this class of expenditure is clearly out of proportion to its importance compared the growth and, to a greater degree, to the poverty performance of the economy (World Bank, 1983). The relative decline of agriculture in Bangladesh may have two explanations. First, it is a statistical reflection of higher rates of growth by industries and services (Table - 2.11). But it is, more importantly due to agro-economic and institutional/structural constraints in the realisation of the technological possibilities implicit in the situation. A major constraint to achieving high rates of growth of farm output in Bangladesh

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21. See in detailed, C.E. Pray, (1980), "An Assessment of the Accuracy of the Official Agricultural Statistics of Bangladesh", The Bangladesh Development Studies, Winter & Summer 1980.

Table 2.11

Relative Rates of Growth of Sectors in Bangladesh Economy, 1973-1983[22]

Year	Compound Rate of Growth		
	Agriculture	Industry	Services
1972/3 -1975/76	10.6	82.0	6.3
1975/76-1982/83	4.8	6.1	6.2
1972/3 -1982/3	7.4	20.4	7.2

Sources : World Bank, Bangladesh: Recent Economic Trends and Medium-Term Development Issues, Washington, March 4, 1983.

is the prevailing agrarian structure, manifested in (a) the concentration of land ownership, and (b) the prevalence of share tendency[23]. As for the empricial significance of the hypotheses, Hossain found that district level variation in land-holding concentration significantly reduced the adoption of high-yielding-variety (HYV) food crops and by implication, the growth potential for agriculture. Similarly, the incidence of tenancy, which presumably is a reflection of the concentration of land-ownership, negatively influences (appropriately controlled) acreage (Hossain, P.63).

22. The rate of growth in col.3 relates to 1975/76 - 1980/81

23. See in M. Hossain (1980), "Foodgrains Production in Bangladesh: Performance, Potential and Constraints", The Bangladesh Development Studies, Winter and Summer, 1980, p. 58.

Relative rate of growth of farm versus non-farm sectors of Bangladesh is thus not merely a question of intersectoral variations in growth rates but also strength of growth depressant structural forces within the system.

Boyce[24] (1987) has conducted an intensive study of agricultural growth of Bangladesh and West Bengal. Based on the estimated simple exponential model, he found that the growth rate of agricultural output in Bangladesh was 2.03 per cent during 1949-90. Boyce also made an attempt to examine the effect of population on agricultural growth in his study. The results of his time-series analysis reveals a positive relationship between agricultural growth in the period 1949-80 and rural population growth in earlier decades. This relationship is found to be strongest when population growth is defined over the twenty-year period 1931-51. Boyce points out that the evidence suggests a lag of approximately thirty years before the effects of population growth attain their full impact.[25] The reverse linkages from agricultural growth to population growth would tend in the long run to offset the positive effects of induced innovation upon per capita agricultural output. Boyce has found that the rate of growth of per capita agricultural output in Bangladesh is -0.11 per cent during the

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24. The rate of growth of per capita agricultural output was 0.59 per cent during 1949-64, but 0.38 during 1965-80 (Boyce, 1987, p.142).

25. Ibid., pp. 145-158.

long period 1949-80[26].

The economic growth is Bangladesh has been erratic over the years and variations were caused largely by changes in agricultural production which in turn was determined by weather conditions, The Two Year Plan 1978-80, achieved a GDP growth rate of 5 percent, an agricultural growth rate of 3.1 per cent and an industrial growth rate of 6.8 per cent.[27] The Second Five Year Plan 1980-85 witnessed an annual growth rate of GDP of 7.2 per cent, an agricultural growth rate of 6.3 per cent and industrial growth rateof 2.6 per cent[28]. It also provides for development of agriculture within the frame work of a comprehensive approach to rural development.

2.2.3.2 **Industrial Economy:**

The pace of industrial development has differed considerably within the country over time. During the sixties, Bangladesh (which was then called East Pakistan) was a neglected partner in the process of development. The strategy was to "promote rapid industrialisation" under the ownership and control of the capitalist class, with all possible assistance from the government, irrespective of its

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26. Ibid., p. 142.

27. The Second Five Year Plan 1980-85, Planning Commission, Government of Bangladesh, pp. 1-7.

28. Ibid, p. 4-5.

consequence for regional and personal income distribution".[29] The industrial sector, especially the large and medium scale units on the other hand was given a preferential treatment, some of which was at the cost of agricultural sector. The intersectoral prices and the tariff structure favoured the industrial sector.

The push towards rapid industrialisation at all costs led inevitably to regional imbalances and significant inter-personal inequities in the distribution of income[30]. A significant part of the small industrial base in the eastern part was owned by the industrialists of the western part who derived benefits from processing Jute, the major export earner of the country into semi-finished and finished goods.[31]

In industries, the role assigned to the private sector was considerably expanded through nationalisation and privatisation in the industrial sector over the late seventies and the early eighties. The move continues to date with

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29. World Bank (1974), "Bangladesh: Development in a Rural Economy," Vol.1, The Main Report, Washington.

30. See, S.R. Osmani (1985) "Some Aspects of Public Policy for Agricultural Development in Bangladesh," Research Paper for BEA, Dhaka and IFPRI, Washington in Dhaka, 11 February; and M.A. Rahman (1984), "Process of Skill Formation in Non-formal Sector: A Case Study in Bangladesh", ILO Project on "Strengthening of Manpower and Employment Programmes," Dhaka (mimeo)

31. For detailed discussion in R. Sobhan and Muzaffar Ahmad (1980), Public Enterprise in an Intermediate Regime. BIDS, Dhaka

proposals for reducing the operation and control of many public sector corporations. During the First Five Year Plan (1973-78), the private sector was allocated only 11 per cent of the total financial allocation of taka 44.6 billion. The percentage was increased to 16 in the Two Year Plan (1978-80) and further to a high 36 per cent of the total outlay of 172 billion taka over the Second Five Year Plan (1980-85).

The New Industrial Policy (NIP) of July 1982 expanded the areas of manufacturing industries for private investment and limited the public sector to basic, heavy and strategic industries.[32]. At the same time, a number of industrial units under the nationalised sector was disinvested.

In Bangladesh manufacturing production declined in the first half of the seventies but the trend was reversed in 1976 when the production increased by over 9 per cent. However, the rate of growth declined to 6.1 per cent in 1977 and to 6.8 per cent in 1978. The overall industrial production remained below the 1969-70 (the base year) level till 1976-77. The production exceeded the base year in 1977-78 and some further progress was made in 1978-79.

All key industries such as jute, sugar and cotton

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32. Six basic sectors were reserved for the public Sector and thirteen were placed in the concurrent List. The Reserved List Covers: (i) defence industries, (ii) atomic energy; (iii) air transport, (iv) telecommunication, (v) generation and distribution of power and (vi) forest extraction. The concurrent list covers, inter alia, jute industries and cotton textiles.

textiles etc., were nationalised immediately after separation from Pakistan in 1971. Units of other industries which were not nationalised but which were abandoned by their owners were also taken over by the Government. Thus the public sector emerged as the predominant sector in industry.

The Second Five Year Plan (1980-85) provided for increased industrial production by better utilisation of existing capacity, by the improvement of sick and inefficient industrial units; by improved management of public sector enterprises; by enlarging the role of private enterprise; by the promotion of small, cottage and rural industries; by a balanced geographical distribution of industry and by increased production of capital goods industries.

The industrial sector contributes 9.8 per cent of GDP, about half of which comes from large scale manufacturing units.[33] The higher growth rate of the small and cottage industries over the sixties and the early seventies and subsequent higher growth of the large and medium units reflects a lack of well co-ordinated and consistent policy towards industrialisation by the government rather than any deliberate attempt to create the differential growth rates,

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33. The scale of manufacturing units were defined under the Factories Act of 1936 and under Factories Act of 1965 as all those units employing 20 or more workers and using power. The census of manufacturing industries 1976/77, covered 2464 live establishments, 1355 (55%) of which were large units.

as they are observed.

The future prospects of the economy of Bangladesh are dependent on the Government's ability to control inflation and to create conditions under which the Second Five Year Plan targets of agricultural and industrial production can be achieved.

2.3.0. Labour-force and Employment in Bangladesh:

It is quite natural that Bangladesh, which experienced a high growth rate of population, will also experience a high growth rate in the labour force. The data in Table 2.12 shows that the labour force grew at a rate of 2.7 per cent per annum which was higher than the population growth rate of 2.3 per cent per annum over the seventies. This was just opposite the trend experienced over the sixties. The high growth over the seventies of Labour force can be partly attributed to the very high rate of growth of female labour force (10 per cent per annum). The rate of absorption of labour force into different sectors, however, varied widely. Agriculture including forestry, fishery and livestock absorbed labour at a positive rate of 1.3 per cent per annum over the sixties. But over the next decade, or more precisely over the inter-Census period of 1974 to 1983/84, the agricultural sector experienced an absolute decline in its labour force. The employed labour force in agriculture declined at an annual rate of 0.3 per cent per annum. This particular phenomenon is of considerable importance as it

tends to indicate that the sector has reached its saturation point in terms of the creation of new employment opportunities. The new entrants to the labour force therefore, either remained unemployed within the sector, or were absorbed in non-farm activities, or else migrated to the urban areas in search of employment opportunities.

Apart from the agricultural sector, all other sectors experienced positive and high growth rates in employment over the seventies. The more important among them being the public utilities, construction, trade and services sectors. These three sectors experienced employment increases at annual rates of 29.6, 24.5 and 14.6 per cent per annum respectively. The experience of the seventies shows interesting contrasts. Employment in the non-agricultural sectors increased at less than half the rate of growth of the sector over the sixties (4.5 per cent per annum compared to 9.7 per cent per annum growth rate of the sector) This sector, therefore, absorbed at least a part of the incremental labour force. Moreover both the public utilities and the construction sectors experienced negative growth in labour force over the sixties, the first by 2.5 and the second by 7.5 per cent per annum. All other sectors experienced low to medium growth in employment except the finance and business services sector where employment increased by 14.7 per cent per annum.

The Labour Force Survey (LFS) of 1983/84 estimated civilian labour force of the country as 28.5 million. It

defined civilian labour force as "persons aged 10 years and above who were either gainfully employed, or were unemployed but looking for work during the reference period". Of this 28.5 million labour force, 91.13 per cent male and 8.87 per

Table :2.12

Growth Rates of Population and Employed Labour Force, Bangladesh, 1961 - 1974 and 1974 - 1983/84.

	1961-1974	1974-1983/84
1. Population	2.5	2.3
2. Labour Force L:F	2.0	2.7
L.F. Male	2.1	2.3
L.F. Female	0.8	10.0
3. Growth of employment by broad industry groups		
(1) Agriculture, forestry, fishery	1.3	- 0.3
(2) Non-Agriculture	4.5	9.7
(i) Manufacturing	1.8	7.5
(ii) Electricity,Gas and Water	- 2.5	29.6
(iii) Construction	- 7.5	24.5
(iv) Transport and Communication	4.3	13.2
(v) Finance and business Services	14.7	11.1
(vi) Trade and Services	2.4	14.6
(vii)Community and Personal Services	8.5	3.8

Source: Preliminary Report on Labour Force Survey 1983/84.

cent female will account for only 8.87 per cent of the active population. Crude activity rate has been estimated as 29.9 per cent (LFS - 1983/84) and the refined activity rate at 43.9 per cent (see Table - 2.13). The great majority of the active population of the country (86.17 per cent) resided in rural areas. The share of the urban areas is only 13.83 per cent.

Table. 2.13

Civilian Labour Force by Sex, Urban and Rural Population 1961 to 1983/84[34]
(in million)

	Census years			
	1961	1974	1981	LFS 1983/84
Total Population	55.2	76.4	89.9	95.2
Civilian Labour Force	16.9	21.9	25.9	28.5
CLF Male	16.1	21.0	94.21	91.13
CLF Female	0.8	0.9	1.5	2.5
Urban	1.0	2.1	3.3	3.9
Rural	15.9	19.8	22.6	24.6
Crude Activity Rate (per cent)	30.6	28.7	28.8	29.9
Male	56.2	53.0	52.7	53.5
Female	3.2	2.5	3.4	5.4
Labour Force Participation	48.6	44.3	43.1	43.9
Male	87.6	80.0	78.2	78.3
Female	5.1	4.0	5.1	8.0

Source: BBS, LFS, 1983/84, Final Report, June, 1986.

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34. Figures in parenthesis are percentages of total.

With the growth in population, both the size and distribution of labour force have changed significantly. As early as in 1961, for instance, the total civilian labour force of the country was 16.9 million. This increased to 21.9 million in 1974 and 25.9 million in 1981. However, such a rapid increase in the level of civilian labour force (CLF) has been associated with a corresponding increase in the proportion of population covered by civilian labour. Between 1961 and 1983/84 participation of population in the Labour force even declined by about 2 per cent.

In terms of the distribution of the economically active population between rural and urban areas, the relative share of urban population in the civilian labour force has been increasing all along. In 1961, urban areas accounted for 5.92 per cent of the active population, the corresponding figure in 1981 stood at 12.74 per cent, and it rose to 13.83 per cent in 1983/84.

Among the different sexes participating in the labour force, various growth patterns may be observed over the years. Most striking among these is the sharp increase in the rate at which females are entering into the labour force. During 1961 to 1974 participation of females in the labour force increased by about 0.8 per cent, whereas during the 1974 - 1983/84 period it grew by 10.7 per cent. For males the corresponding rates have been 2.1 and 2 per cent respectively (Table 2.14). Moreover, the rate of growth of the females participating in the labour force has been much

greater in urban areas as compared to rural. The respective rates of growth during 1974 to 1983/84 have been 14.9 and 10.1 per cent respectively.

Table: 2.14

Annual Average Labour Force Growth Rates by Sex and Urban, Rural Residence in Bangladesh.

		1961 to 1974	1974 to 1983/84	1961 to 1983/84
Bangladesh	Both Sexes	2.0	2.6	2.2
	Male	2.1	2.0	2.1
	Female	0.8	10.7	5.1
Urban	Both Sees	5.7	6.1	6.0
	Male	5.7	5.4	5.5
	Female	5.2	14.9	6.2
Rural	Both Sexes	1.7	2.1	1.9
	Male	1.8	1.6	1.7
	Female	0.4	10.1	4.3

Source: BBS, LFS, 1983/84.

Two sectors which are likely to be natural refuse for the unemployed work force are the rural non-farm and the urban informal sectors. Latest information as obtained from the **Preliminary Report on Labour Force Survey** shows quite interestingly that the absolute number of employed work force in the agricultural sector has declined at a rate of -0.4 per cent per annum. This means that either the rural non-farm activities which account for about a third of rural employment have absorbed the additional labour force on that there had been significant out-migration from the rural to the urban centres.

We know that economic growth under any system depends on the successful fulfillment of the developmental role by the government. The strategies adopted and policies governed for the development of the area now comprising Bangladesh has undergone synoptic changes during the last two decades. These changes largely reflect the political turbulence through which the country passed during the late sixties and the early seventies. No less important however is the vulnerability of this extremely poor economy to internal and external shocks. The overwhelming poverty and deprivations, large scale unemployment and the need for maintaining some economic stability even at the cost of external dependence provided the backdrop for assessing and analyzing the fluxes and changes in the development strategies and policy priorities of the government.

2.4.0.Population Growth in Bangladesh :

Today, the Third World is confronted with an overwhelming number of critical problems such as very high rates of population growth, poverty, low growth rates of gross domestic product, low rates of urbanization and low rates of industrialization, extremely high dependence on agriculture, high rate of unemployment and inequitable distribution of income. The high rates of population growth is the major problem for Bangladesh.

Bangladesh is one of the Third World nation which has a

large density of population. According to Rahman and Mahbub (1989), it is the ninth most populous country in the world, only recently pushed down from the eight rank by Nigeria[35]. It has the third largest and the most homogenous population in South and South-East Asia after India and Indonesia[36]. Bangladesh is a rural country where about eighty five percent of the total population lives in the rural areas and more than sixty five percent is agricultural and has more or less a uniformly high population density per unit of land area as well as the least developed urban and non-agricultural industrial and service sectors.

According to the 1991 Census account the size of population of Bangladesh was 10,7993,000 persons (about 11 million) and the density of population per square kilometre was 728 persons[37]. The population varied in different census years from 1901 to 1991 (Table 2.15). It appears that the size of population in Bangladesh has increased about four times during a period of 80 years between 1901 and 1991. The density of population has increased more than three fold during the last 90 years. It may be worth not-

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35. See, Azizur Rahman Khan and Mahbub Hossain (1989), Op. Cit. 198.

36. See, K.Mauood Elahi (1993), "Evolution of Population in Bangladesh: A Spatio-Temporal Study", in International Symposium on Population Growth in Developing Countries, CSRD, Jawaharlal Nehru University, New Delhi, 20-24, December 1993, India, p. 2.

37. BBS, 1991, Population Census of Bangladesh (Preliminary Report), Dhaka: Government of Bangladesh.

ing, however, that density of population was always high in Bangladesh compared to that in other countries of South Asia[38]. In 1901, Bangladesh had a population of 28.92 million. It increased by 9.08 per cent in 1911 and the density of population increased from 201 to 219 persons per square mile between 1901 and 1911. In the period 1911 to to 1921, the rate of increase was very slow (5.38 per cent) due to high mortality. After that the growth rate started to recover until 1931 (5.38 per cent to 7.07 per cent). In our enquiry due to overestimation and the socio-political condi-

Table: 2.15

Size, Density and Growth Rate of Population in Different Census Years 1901-1991

Year	Number	% Age Increase	Annual Growth Rate (Percent)	Density (Per Sq.Km)
1901	28927786	-	-	201
1911	31555056	9.08	0.94	219
1921	33254096	5.38	0.60	231
1931	35604170	7.07	0.74	247
1941	41997297	17.96	1.70	292
1951	44165740	5.16	0.50	307
1961	55222663	25.04	2.26	383
1974	76398000	38.35	2.48	531
1981	89912000	17.69	2.32	624
1991	107993000	20.11	2.17	750

Source: BBS, (1991: 45)

Note : The Values have been Shown in Round Figures.

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38. For example, Bangladesh had a population of 531 persons even in 1901. But the density of population was 435 persons in India in 1974 and 1971 respectively.

tions[39] the population growth estimation was very high in 1941 (17.96 per cent). In the next decade (1941-51) the rate of increase was low (5.16 per cent) due to the Bengal famine of 1943, when about 2.8 million lives (ESCAP, 1981) were lost. Subsequent movement of population during the partition of India in 1947 further reduced the population. The decade 1951-61 showed a relatively higher rate of population increase owing to somewhat stable socio-political conditions, the combined effect of the efforts of improved health condition adopted in post-famine years and a successful check on famines[40]. The density has been constantly rising and is alarmingly high at present. Therefore, we have seen from Table-2.15 that the density of population was 307, 383, 531, 624, 750 persons per square mile in 1951, 1961, 1974, 1981 and 1991 respectively. Thus, although Bangladesh stands as a populous as well as the most densely populated country in the world.

The density of population considerably changes among the regions (the greater former districts) within the country. Changes in population distribution over time are but a reflection of the differentials in rates of growth

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39. Government of Pakistan (Gop) 1951, Census of Pakistan, 1951, Vol. 3: East Bengal: Karachi, Ministry of Home Affairs.

40. K. Maudood Elahi (1993), Op. Cit. in 36, p. 8.

between different districts (regions). Thus, the very nature of the change of population has not only put a mark on the density of population per unit area but also has affected the regional patterns in population change (Table-2.16).

We are concerned that when the regions of a country and its constituent units is fixed over time, population growth will increase the population density. If the population growth is uniform, density will increase uniformly, but a differential pattern of population growth in regions will lead to variations in population densities. The following table shows that in 1901, there were 534 persons per sq. mile in Bangladesh. The respective figures for 1911, 1921, 1931, 1941, 1951, 1961, 1974 and 1981 were 583, 614, 656, 776, 761, 922, 1286 and 1567. Despite the change in the overall population density in the country, its regional patterns in the recent decades have shown little change particularly in the pre-independence periods. And we have seen that after the independence periods population was concentrated in the industrial towns and the port and capital city (i.e. Dhaka, Khulna, Chittgong etc.). But there was little difference in the number of regions registering population density below the country's average in 1961 and 1974.

Table-2.16 shows that the density of population considerably varies among the regions (the greater former districts). From Table-2.16 we have seen that in

Table: 2.16

Change in Density of Population by Region in Bangladesh
(Census Years, 1901-81)

S.No	Regions	1901	1911	1921	1931	1941	1951	1961	1974	1981
1.	Chittagong	527	587	637	699	838	902	1139	1549	1907
2.	CHT	25	31	35	43	49	57	75	100	148
3.	Comilla	845	970	1065	1208	1525	1500	1794	2245	2701
4.	Noakhali	715	816	922	1068	1388	1424	1468	1591	1810
5.	Sylhet	416	459	471	505	580	628	737	995	1152
6.	Dhaka	955	1069	1157	1258	1541	1492	1909	2643	3472
7.	Faridpur	689	758	786	837	1026	1051	1311	1521	1793
8.	Jamalpur	-	-	-	-	-	-	-	-	-
9.	Mymensingh	630	727	777	824	968	917	1093	1511	1896
10.	Tangail	-	-	-	-	-	943	1143	1587	1860
11.	Barisal	615	647	704	791	943	1031	1176	1407	1656
12.	Jessore	633	614	611	596	651	656	877	1288	1584
13.	Khulna	264	287	306	339	404	432	600	768	922
14.	Kushtia	646	614	517	489	671	647	882	1404	1726
15.	Patuakhali	-	-	-	-	-	680	732	895	1166
16.	Bogra	599	689	734	761	855	868	1075	1486	1817
17.	Dinajpur	444	461	481	587	527	544	659	985	1262
18.	Pabna	776	780	759	788	929	869	1157	1477	1874
19.	Rajshahi	523	550	558	548	604	608	788	1168	1443
20.	Rangpur	595	658	601	715	790	792	1130	1472	1757
	Bangladesh	534	583	614	656	776	761	922	1286	1567

Notes : 1. From 1901-1961 Patuakhali was included under Barisal and Tangail was under Mymensingh district.
2. Population density based on unadjusted Census population and total area.
3. Density of Populaiton measured by per sq.mile.

Source : BBS, 1984-85, p. 63 (Table 2.4)

1981[41] Dhaka, Comilla, Chittagong, Noakhali, Jamalpur, Tangail, Bogra and Pabna were the most densely populated while Chittagong Hill Tracts, Khulna, Sylhet, Patnakhali were less densely populated regions in the country. The table further shows that the density of population in the regions of Comilla, Noakhali and Pabna was always higher than the national figure since 1901, although relative density is slightly lower in Noakhali region during the last decade due to out migration from the other regions. Nationally, population density has increased from 534 persons in 1901 to 1567 persons in 1981. The index of population density in 1951 shows more clearly the differentials in population redistribution revealing that density grew at the fastest rate in Mymensingh, Dhaka, Comilla, Noakhali, where the index rose in 1981 respectively. Throughout most of the 80 years from 1901 to 1981 period, density grew much faster in the regions in Dhaka, Comilla, Mymensingh and Rangpur and Dinajpur. Chittagong Hill Tracts is the least densely populated area in Bangladesh.

Due to the socio-economic conditions density of population or the percentage of population varies from region to region and within the country itself. It also varies in rural and urban areas. Bangladesh is a rural-based country. Its economy mostly depends on agriculture. Most of the eighty per cent population lives in rural areas. So, the

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41. The full-fledged report of the 1991 population census is yet to be published.

population of Bangladesh is thoroughly rural and agricultural. The percentage of the urban population is growing slightly. So, the intercensal change in urban population is growing. Table-2.17 shows that in 1901 the urban population was 2.43 per cent, whereas the rural population was 97.57

Table 2.17

Percentage Distribution of Urban and Rural Population, Percentage Changes in the Intercensal Periods and Rates of Growth by Census Years (1901-1981)

Census Years	Percentage		Inter-censal Change in UP* (%)	Rate of Gorwth (Exponential)		
	Urban	Rural		Urban	Rural	National
1901	2.43	97.57	-	-	-	-
1911	2.55	97.45	14.95	1.39	0.85	0.87
1921	2.64	97.36	8.85	0.85	0.51	0.53
1931	3.02	96.98	22.20	2.00	0.64	0.68
1941	3.66	96.34	43.20	3.59	1.58	1.65
1951	4.33	95.67	18.38	1.69	0.00	0.00
1961	5.19	95.81	45.11	3.75	1.83	1.92
1974	8.78	91.22	137.57	6.62	2.30	2.62
1981	15.18	84.82	110.85	10.63	-	-

Source: GOP, 1961; GOB, 1974; Chaudhury, R.H., 1980; GOB, 1984.

* UP = Urban Population

per cent. In 1981 the urban population was 15.18 per cent and 84.82 per cent in rural. The intercensal percentage change in urban populatgion also varied in few census years. In 1911 the intercensal urban population change was

14.95 per cent from 1901. In 1921 the population change was 8.85 per cent Again, we have seen from the table that in 1951 the intercensal urban population change is lower (18.38 per cent) than in 1941 (43.20 per cent). The rate of growth (exponential) of urban population is increasing from the beginning Census (1901) to present (1981) census years. The growth rate of urban population in 1911 was 1.39 per cent. But in 1981 the urban population grews as 10.63 per cent.

In our present study an attempt has been made to analyse the population as well as the process of urbanisation in Bangladesh. If we look up the population distribution figures from 1951 to 1981 Census for our consideration, we have seen that the urban population is growing rapidly due to the economic opportunity in urban areas (Table 2.18). Table shows that in 1951 the urban population was 4.33 per cent of the national total. Whereas in 1961, 1974 and 1981 the national urban population was 5.19, 9.13 and 15.18 per cent respectively. So, the national urban population in Bangladesh is growing rapidly from the beginning census years.

The regional population distribution over the period under investigation, Table 2.18 shows that in 1951 the urban population was higher in Chittgong region (12.77 per cent). On the other hand Noakhali carried a lower perentage of ppulation in urban areas (0.97 per cent). In 1961, 1974 and 1981 census the highest urban population was in Dhaka region and the respective percentage was 14.80, 31.18 and 38.52 per

Table: 2.18

Percentage Distribution of National Urban and Rural Population by Regions in Bangladesh, 1951-1981. (Population in '000)

S.No	Regions (Former Major Districts)	1951			1961			1974			1981		
		National	Rural	Urban	National	Rural	Urban	National	Rural	Urban	National	Rural	Urban
	Bangladesh	100.0	5.67	4.33	100.0	94.81	5.19	100.0	90.87	9.13	100.0	84.82	15.18
1.	Chittagong	5.51	87.23	12.77[1]	5.87	87.50	12.50	6.08	78.11	21.88	6.30	68.86	31.14
2.	CHT	0.68	-	-	0.76	94.03	5.97	0.71	89.82	10.18	0.86	71.64	28.36
3.	Comilla	9.03	96.92	3.08	8.63	96.83	3.17	8.11	95.75	4.24	7.90	91.88	8.12
4.	Noakhali	5.41	99.03	0.97[2]	4.69	98.57	1.43[2]	4.51	97.85	2.14[2]	4.38	89.20	10.80
5.	Sylhet	7.29	98.01	1.99	6.86	97.97	2.03	6.63	97.24	2.76	6.49	91.25	8.75
6.	Dhaka	9.72	89.95	10.05	10.02	85.20	14.80[1]	10.85	68.82	31.18[1]	11.49	61.48	38.52[1]
7.	Faridpur	6.47	97.87	2.13	6.25	97.51	2.49	5.66	97.13	2.86	5.47	93.05	6.95[2]
8.	Jamalpur	+	+	+	+	+	+	2.87	94.90	5.10	2.81	91.27	8.73
9.	Mymensingh	13.78	96.86	3.14	13.80	96.58	3.42	10.54	95.80	4.20	7.54	89.97	10.03
10.	Tangail	+	+	+	+	+	+	2.90	94.76	5.24	2.81	92.43	7.57
11.	Barisal	8.67	96.38	3.62	8.38	97.21	2.79	5.48	96.08	5.92	5.36	88.04	11.96
12.	Jessore	4.06	97.83	2.17	4.32	96.58	3.42	4.64	94.58	5.42	4.61	89.18	10.82
13.	Khulna	4.94	96.68	3.32	4.82	92.98	7.02	5.03	94.13	15.86	4.97	77.59	22.41
14.	Kushtia	2.11	95.37	4.63	2.29	94.60	5.40	2.62	91.67	8.32	2.63	85.47	14.53
15.	Patuakhali	*	*	*	*	*	*	2.09	97.49	2.50	2.12	91.00	9.00
16.	Bogra	3.05	97.19	2.81	3.10	97.01	2.99	3.11	96.29	3.70	3.13	92.56	7.44
17.	Dinajpur	3.28	94.42	5.58	3.36	95.79	4.21	3.58	95.58	4.42	0.04	91.44	8.56
18.	Pabna	3.77	95.65	4.35	3.85	94.90	5.10	3.92	92.39	7.61	3.93	88.35	11.65
19.	Rajshahi	5.26	96.16	3.84	5.53	95.73	4.27	5.92	94.21	5.78	6.05	89.66	10.35
20.	Rangpur	6.95	95.63	4.37	7.47	95.81	4.19	7.59	95.19	4.81	7.47	89.09	10.91

Source : Computed from different Census [GOP, 1951, 1961, GOB, 1974, 1981]

Notes : + including Mymensingh, Jamalpur and Tangail
* including Barisal and Patuakhali

cent. From 1951 to 1974 Census we see from the table that Noakhali region has the lowest urban population from among the districts of Bangladesh and the respective figure was 0.97, 1.43 and 2.14 for the 1951, 1961 and 1974. In 1981, the lowest urban population was in Faridpur region. From the above table we also see that in only two major regions (i.e. Dhaka and Chitttagong) the urban population is growing faster than the other regions of the country. As, Dhaka is the capital and Chittagong is the port city, the urban population is more rapidly growing than in the other regions of Bangladesh. Khulna region is also growing as a port and industrial city. Bangladesh has four metropolitan cities (including Dhaka, Chittagong, Khulna and Rajshahi).

The urban population in Khulna and Rajshahi Metropolitan City was 22.41 and 10.35 per cent in 1981. So, as a metropolitan city the percentage of urban population in Rajshahi is much lower than other metropolitan regions, it is also lower than the other medium-sized cities in Bangladesh, Rajshahi is a purely educational town. A very small amount of industry has been set up in this region. Hence, the economic activity here is lower than in other metropolitan cities. In other regions of Bangladesh urban population is much lower. Rural popultion is growing fast. According to Elahi's[42] (1933) study, the measurement of overall distribution patterns of population changes for 1951-61,

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42. K. Maudood Elahi (1993), Op. Cit., p. 12.

1961-74 and 1974-81 are as follows (Table-2.19):

Table:2.19

Pattern of Distribution in Population Variations in Bangladesh

	1951-61	1961-74	1974-81
n*	62	62	64
	22.55	40.95	23.92
	8.79	15.02	15.90
V(%)	38.98	36.68	66.47

Source: Elahi, K.M. (1993) P. 12
* Districts (including new districts)

According to some source, the coefficient of variation (v) quite deviated from the mean (x) for 1951-61. It indicates that the distribution patterns of population change has been quite uniform. A somewhat different picture emerges from the patterns of population variation in the 1961-74 and 1974-81 periods. For these periods, the values of 'v' are rather closer to the X and therefore, the resultant spatial pattern is much more well defined in contrast to those in other intercensal decades (Fig.1).

Though the population density is rising in Bangladesh, the differential growth rates in different regions have affected its spatial patterns. Intra-regional movement of population within the country and the return migrants from other neighbouring countries (especially from India) were an important factor for variations in spatial pattern of population increase in Bangladesh. The currently accepted official time series on population growth, is yet to be verified by an actual count for the period after 1981. We

observe that the population growth rate peaked in the late 1960's reaching 3 per cent per year. At that time the birth rate was some where between 45 and 50 per thousand and the death rate was close to 20 per thousand. Since the 1960s the rate of growth constantly increased till the mid-1970s. In the first decade after independence, the population growth rate declined substantially to some thing like 2.3 per cent per year due to a decline in the birth rate to well below 40 per thousand and a smaller decline in the death rate to about 15 per thousand. However, during the last decade, the rate of growth has further declined, although it still remains high above 2 per cent. So, in the early 1980s the population growth rate increased significantly to a level about 2.5 per cent per year. The reasons behind this rise are not yet adequately explained. It seems unlikely, however, that it is due to entirely a further decline in mortality. Available evidence suggests that there has been no decline in the death rate in the 1980s. It follows, therefore, that implicit in the current estimates of popul-tion growth for the post 1981 census period used by the Bangladesh Bureau of Statistics (BBS) and the Planning Commission is an admission that the crude birth rate in the 1980s rose significantly and is higher than it was in the 1970s. Despite this, however, the birth rate is still very high as 32.0 per thousand in 1990 (Table-2.20) which is an alarming rate for a region which is already densely populat-ed. Crude birth rate has declined quite considerably during

the period from 1975 to 1991. As a result, total fertility rate has also considerably declined during this period leading to some decline in growth rate. The declining birth rate in the recent decades is the result of the massive family planning campaign.[43]

From Table-2.20 we see that the crude birth rate (CBR)has declined at a lower rate than the crude death rate (CDR) during the decades between 1950-1980. As per the result of improved consciousness the total Fertility Rate (TFR) and the infant mortality rate (IMR) has declined over the time period. Though in 1961 the total fertility rate was 6.78 and infant mortality rate was 144, but in 1990 the respective rate was 4.33 and 91.

As elsewhere the population growth in the region has taken place due to natural increase and migration of people. During the early decades of the present century, particularly before Independence, the decadal growth rate of

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43. The Family Planning programme had been launched in Bengal 1892 and in Bangladesh since 1960s. But the campaign became quite intensive only since late 1970s. Today a large family planning department of the government and a huge number of non-government organisations, funded by foreign aid, are involved in the campaign throughout the whole country. The government is now declared as the prime issue of population growth problem, which is affected for the national economy as a negatively.

Table 2.20

Vital Rates of Bangladesh, 1951-1981
(per thousand population)

	CBR*	CDR*	TFR*	IMR*
1951	49.4	40.7	-	168
1961	48.1	29.7	6.78	144
1975	49.9	-	6.34	-
1981	42.0	14.0	-	125
1985	34.6	12.0	4.71	-
1990	32.0	11.3	4.33	91(1991)

Source : Reproduced from Table:2.26 and Table :2.34 GOB (1991), p. 62 and Elahi, K.M. (1993), p. 9.

population in the region was relatively low and uniform. Apart from small volume of migration it was mainly because of comparatively high birth and high death rates prevalent at that time. In our earlier, discussion we have seen that a sharp fall of death rates combined with slow decline of birth rates has contributed significantly to the increased population growth rates. We have also mentioned that one of the causes of decrease in the death rates in the region is the decline in the Infant Mortality Rate (IMR). Bangladesh witnessed a fall of IMR from 168 in 1951 to 91 in 1990. Additionally higher life expectancy has also been factor of high natural increase of population in the different regions in Bangladesh.

Natural population growth, however, varies significant-

ly both spatially and temporally with in the region of the country due to a number of socio-cultural factors. In recent times, net increase varies from year to year, for example, Faridpur, Noakhali, Patuakhali, Mymensingh, Barisal, showed that the highest net increase in these regions from different sources. On the other hand highest net migration from these regions among the other regions of the country (Table-2.21). In recent times net increase is the lowest in Chittagong Hill Tracts, Chittagong, Dhaka, Kushtia and Bogra regions of the country from the above sources. It indicates that population growth in these regions was highly influenced by the volume of migration from outside.

Migration, which turns out to be the second most important factor in the growth of population in the region, has a long historical background. There may be different types of migration in a country: (1) in-migration and (2) out-migration; (3) permanent migration,(4) temporary migration; and (5) migration within the country and migration to or from other countries. Table-2.21 shows the permanent net migration that took place amongs the regions within the country during 1951-81. In the past, liberation period, net migration is highest in the Dhaka region, and quite naturally so, since the importance of the capital city of Dhaka tremendously increased after independence and a large number of people have migrated from the rural areas as well as other cities to Dhaka city. Apart from this rural-urban migration, considerable migration has also been taking place

Table: 2.21

Life Time Net Migrants by Regions, 1951-1981

S.No.	Regions	Net Migrants			
		1951	1961	1974	1981
1.	Chittagong	+ 14471	+ 36473	+ 52592	+ 209083
2.	CHT	+ 20008	+ 50513	+ 90849	+ 99968
3.	Comilla	- 76933	-189985	-358045	+ 584703
4.	Noakhali	- 95045	-202507	-261226	- 409030
5.	Sylhet	+ 58492	+ 96813	+130675	+ 197761
6.	Dhaka	- 57402	+ 50846	+578654	+1142369
7.	Faridpur	- 13331	- 63213	-252777	- 406463
8.	Jamalpur	-	-	-	- 21343
9.	Mymensingh	- 29755	-122739	-111250	- 226925
10.	Tangail	-	-	- 96870	- 43809
11.	Barisal	+ 10964	- 51140	- 14478	- 380307
12.	Jessore	+ 20385	+114927	+ 40321	+ 57836
13.	Khulna	+ 37666	+ 74042	+227225	+ 285272
14.	Kushtia	+ 1608	+ 4475	+ 19199	3679
15.	Patuakhali	-	-	184540	- 24392
16.	Bogra	+ 647	- 11577	- 16488	+ 2099
17.	Dinajpur	+ 20470	+ 75381	+132409	+ 165487
18.	Pabna	- 37500	+ 70615	- 99166	- 105157
19.	Rajshahi	+ 38182	+ 66651	+ 60887	+ 25859
20.	Rangpur	+ 86473	+141655	+ 62029	- 18803

Notes : (+) indicates net migrants from the region
(-) indicates net out-migrants from the region. Patuakhali district was a part of Barisal region, during 1951 and 1961 censuses and data from Patuakhali were included in Barisal for those years. Tangail was a part of Mymensingh region during 1951 and 1961 census. Jamalpur was a part of Mymensingh region during 1974.

Source : Reproduced from BBS, 1983-84, p.136. (Table)

among the rural areas of the regions. Taking 1951 population as the base, a comparison of Table-2.16 and Table-2.21 reveals that the people from the most densely populated regions such as Comilla, Noakhali, Faridpur, Jamalpur, Tangail, Patuakhali, Pabna have been migrating out to other regions and the people from other regions have been migrating to the sparsely populated regions such as Chittagong Hill Tracts, Khulna and Dinajpur. However, the table also indicates that density alone cannot explain the inter-region migration behaviour satisfactorily. In 1981, some people were found to have migrated out even from the sparsely populated districts such as Khulna. On the other hand, some people have migrated even to such densely populated area such as Bogra. Urbanization, population density, location of the districts[44] and prospect of jobs in the district are the main determinants of inter-district migration.[45] Nevertheless, permanent migration from one region to another region within the country is not high. The percentage of life time migrants was only 2.31 in 1951, 3.53 in 1961, 3.44 in 1974 and 4.50 in 1981[46]. But the level of temporary migration of labour among the regions is likely to be quite

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44. For example, some people have migrated from India to some border districts like Bogra even though they were already densely populated.

45. See Barkley (1991: 275-96) in detailed. Barkley has carried out an intensive analysis of the determinants of inter-district migration in the context of Pakistan.

46. Excludes Bangladeshi who were born outside but enmurated in Bangladesh, Bangladesh Bureau of Statistics (BBS), 1986, p. 156, Table. 2.76.

high. People from the regions of relatively backward agriculture and low cropping intensity such as Noakhali, Faridpur and Rangpur migrate for one or more seasons to the regions where agriculture has developed, such as Comilla, Mymensingh and Dhaka. Data on temporary migration are not available in the government sources.

The decades after Independence marked a new stage of demographic development in Bangladesh. The decade 1974 - 1981, witnessed an unprecedented volume of migration when the population growth in the region shot in the different sources. After independence from Pakistan, the people from other parts of the country migrated in large number to the bigger urban centres such as Dhaka, Chittagong, Khulna region, particularly to the urban areas in connection with trade and commerce, industrial establishments and employment opportunities in different categories of occupations. Apart from this inter-district migration, a large number of people have migrated to the foreign countries, mostly to the Middle East. From one source, we have seen that the number of persons leaving abroad for employment have risen from 6,087 in 1976 to 56,753 in 1984 (to 405,929 in 1985)[47]. The source also indicate that in 1990 most of the migrant (94.23 per cent) were workers followed by technicians and professionals. Thus, although out-migration is still not very

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47. The figures represent temporary migration data on permanent migration to other countries are not available in the government office sources.

high, it has rapidly increased during the last two decades. In the most recent years, it is showing some stagnating tendency both at inter-regional and national levels.

We have examined in this section the important aspects of population growth and migration. It has shown that Bangladesh is extremely densely populated country of the world (750 persons per kilometre in 1991) where the rate of population growth is also high. The population growth has been declining in the recent years. Since the mid-1970s, a large number of people have been migrating to different regions of the country and outside the country for employment opportunity. So, some internal migration from the more densely populated regions to the less densely populated regions is also taking place such as Chittagong Hill Tracts. During the last two decades, employment in the non-agricultural sectors, mostly in the secondary and tertiary service sectors, has rapidly increased.

This excessive population growth is due to natural increase and migration has exerted a great impact on the demographic as well as socio-economic character of the region. Besides the above discussion, the explosive population growth is halting the pace of socio-economic development in the regions of Bangladesh. It is reflected in the fact that more than two-thirds of its male workers are still dependent on agriculture as Bangladesh is a rural-agricultural based country and dependency has not decreased

significantly in the recent decades. Besides, increasing pressure of rural population on limited agricultural land and non-existence of adequate infrastructure and traditional systems of agricultural farming accompanied by increasing unemployment have resulted in large scale migration of both educated and landless rural people to the urban areas for employment.

The Pattern and Process of Urbanization in Bangladesh

CHAPTER III

3.0.0. Growth of Urban Population in Bangladesh:

In this chapter we will document and analyse the urban growth patterns and the process of urbanization that has occurred in Bangladesh during the twentieth century. The history of urban growth in Bangladesh is more than 2,500 years old, with rich heritage of few small planned cities. In the medieval times there were towns of different sizes which served mainly as centres of administration, commercial activities and religious festivals. Although some of these towns had considerable population, their impact on overall urbanization of the country was very insignificant. Hence the region has an uneven distribution of urban population.

In this section the forms and process of urban growth in Bangladesh from 1901 to 1981 Census will be discussed. The distribution pattern of urban population by size-classes and the pattern of growth of towns in different size-classes will also be analyzed.

Urbanization and urban growth are not synonymous. Urbanization is measured by the percentage change in the proportion of the urban population to that of the total population. Urban growth, on the other hand, is measured by the percentage change in the urban population itself between two points of time. A rise in urban growth need not entail an increase in urbanization, or vice-versa. The level of urbanization rises only when the rate of growth of the urban

places is higher than that of the growth rate of rural settlements.

Urbanization is often identified with urban growth and urban growth usually leads to urbanization. Though both are interrelated processes, yet they are different. Therefore, a distinction between the two is essential. Urbanization refers to the proportion of the total population concentrated in urban settlements, or else to a rise in this proportion.[1]. It is a process by which a human society is transformed from a rural to an urban one both in the economic and social sense Areas that have a high income, high consumption, high level of living, have more facilities than rural people, as well as a high level of development are called urban areas, The pace of urbanization is slower in more developed regions. This is because, they have reached a limit with regard to rural-urban migration as most of the people live in urban areas. In this respect urban growth on the other hand, is just the growth in the number of urban residents which could be an outcome of the excess of births over deaths. It may or may not be accompanied by urbanization. Even after urbanization has ceased in an area, urban growth may still continue by a process of natural increase as well as the rural urban migration. Thus, urbanisation is

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1. See. Kingsley Davis, "The Urbanization of the Human Population", C.F. Breeze, Gerald, The City in Newly Developing Countries, Prentice Hall International Inc. London., 1972, p.7.

a finite process, urban growth could go on infinitely. Urbanization in developed countries has been accompanied by industrialization which led to economic growth and prosperity in both urban and rural areas, narrowed down the disparity between urban and rural living standard and arrested the flow of rural population to the cities. Urbanization in the developing countries like Bangladesh is the result of the persistent anomalies in economy and living standard between urban and rural areas. This is the main cause of rural immigrants into the cities and is acting as the main determinant of the high rate of urban population growth.

Bangladesh has one of the highest rates of urban population growth among the least urbanized countries. According to Haque[2] the annual average urban population increase is 7 per cent as against the national population growth rate of 2.4 per cent. The urban population growth was characterized by a very low urban population during the first half of this century. It had a considerable high rate of increase during the later half of the century. During the whole span of the period from 1901 to 1991, the urban population of the country has increased 35 times, i.e., from 0.70 million in 1901 to about 24.10 millions in 1991. By the turn of the century, in 2001, the urban population of the country is expected to increase to about 39.10 million and in 2015 to

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2. Haque, M.M. (1992), "An Overview of Urban Land Management in Bangladesh, in Islam, N and Chowdhuri, A.I.(eds.) 1992.

about 67.90 million.[3] (Table 3.1).

Table: 3.1

Growth of Urban Population in Bangladesh 1901-81

Census Years	Total Urban Population (Million)	Urban Population as % of Total Population (i.e. Level of Urbanization)	Decadal Increase of Urban Population	Average Annual Growth Rate of Urban Population (exponential)
1901	0.70	2.43	-	-
1911	0.80	2.54	14.96	1.39
1921	0.87	2.61	8.85	0.84
1931	1.07	3.01	22.20	2.00
1941	1.54	3.66	43.20	3.59
1951	1.83	4.34	18.38	1.58
1961	2.64	5.19	45.11	3.72
1974*	6.00	8.87	137.57	6.70
1981	13.56	15.54	115.76	10.97
1991	24.10	20.70	77.73	5.72
2001	39.10	27.10	62.24	4.84
2015	67.90	36.80	19.54	3.57

Notes : Figures in the parenthesis represent enumerated population. The Census scheduled in 1971 could not be held due to Liberation War and was held in 1974.

Source: Task Force Report, 1991, based on BBS, Government of Bangladesh, Population Census 1981, Report on Urban Areas, 1987.

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3. See, 'Report of the Task Forces on Bangladesh Development Strategies for the 1990's, in Developing the Infrastructure, vol.3, University Press Ltd, 1991, Dhaka.

The share of the country's urban population in the total population is very low in comparison to many Asian countries. The share rose from only 2.43 per cent to 15.54 during the eight decades between 1901 - 1981 (Table 3.1). The trend shows a sluggish situation till 1961 after which there was a rising trend particularly during 1974 - 1981 period. Almost it has been shown that the level of urbanization was very low during the British period (1901 - 1947), particularly at the beginning of the Census and it remained almost static during the first two decades (1901 - 1911 and 1911 - 1921). The rate of urbanization increased in momentum during the period 1951 - 1961 and continued growing during 1961-74. During 1974-81, the rate of urbanization increased very rapidly and doubled in 1974. The absolute size of the urban population is also quite huge. Even at 15% level of urbanization, the absolute urban population size was 13.56 million in 1981. By 2015 AD this number would rise to 67.9 million, at levels of urbanization estimated to be 36.8% in 2015, 33.3% in 2010 and 29.8% in 2005 A.D. (Table - 3.2).

If we consider the definition[4] of urban areas as settlements having a population of 20,000 and more persons, 1.0 per cent of Bangladesh's population qualified as urban in 1901, 3.35 per cent in 1951, 4.14 per cent in 1961, 7.73 per

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4. The definition is usually employed by United Nations as a standard measure for comparison of urban growth among countries.

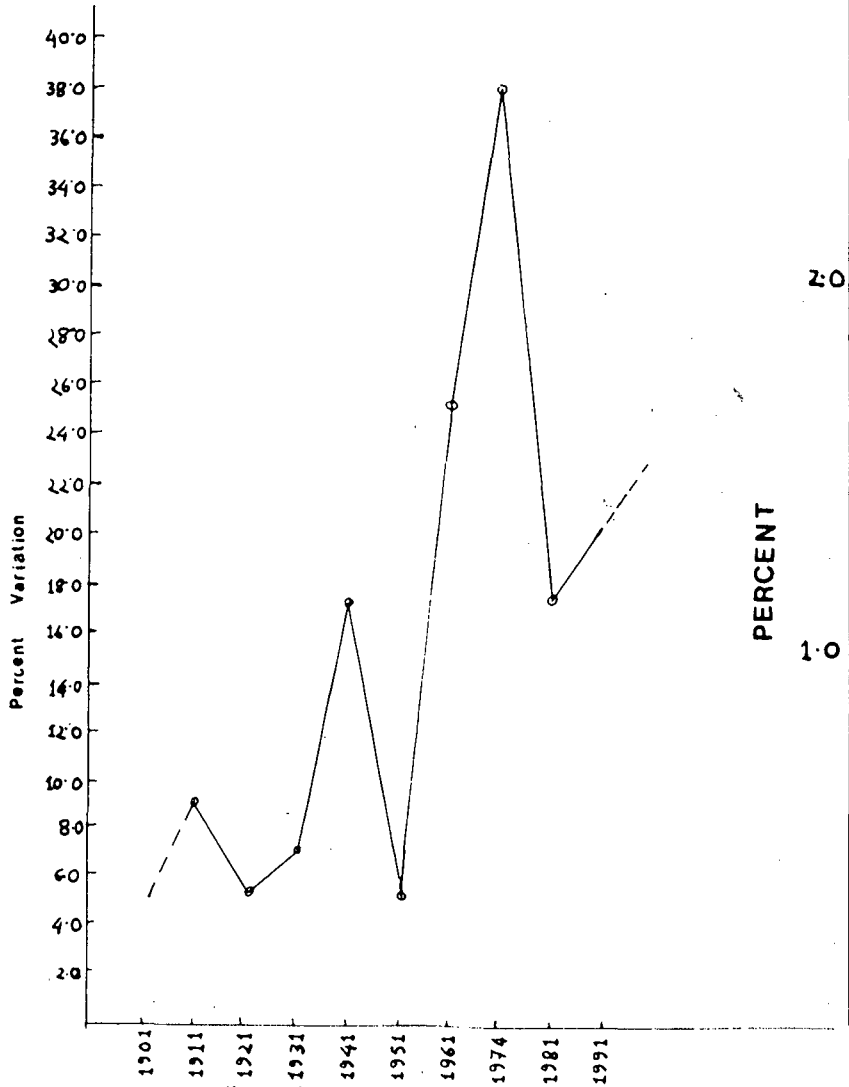

FIGURE – 3.1 : INTER–CENSAL GROWTH RATE OF POPULATION, 1901–91

Source: BBS (1991), P. 45

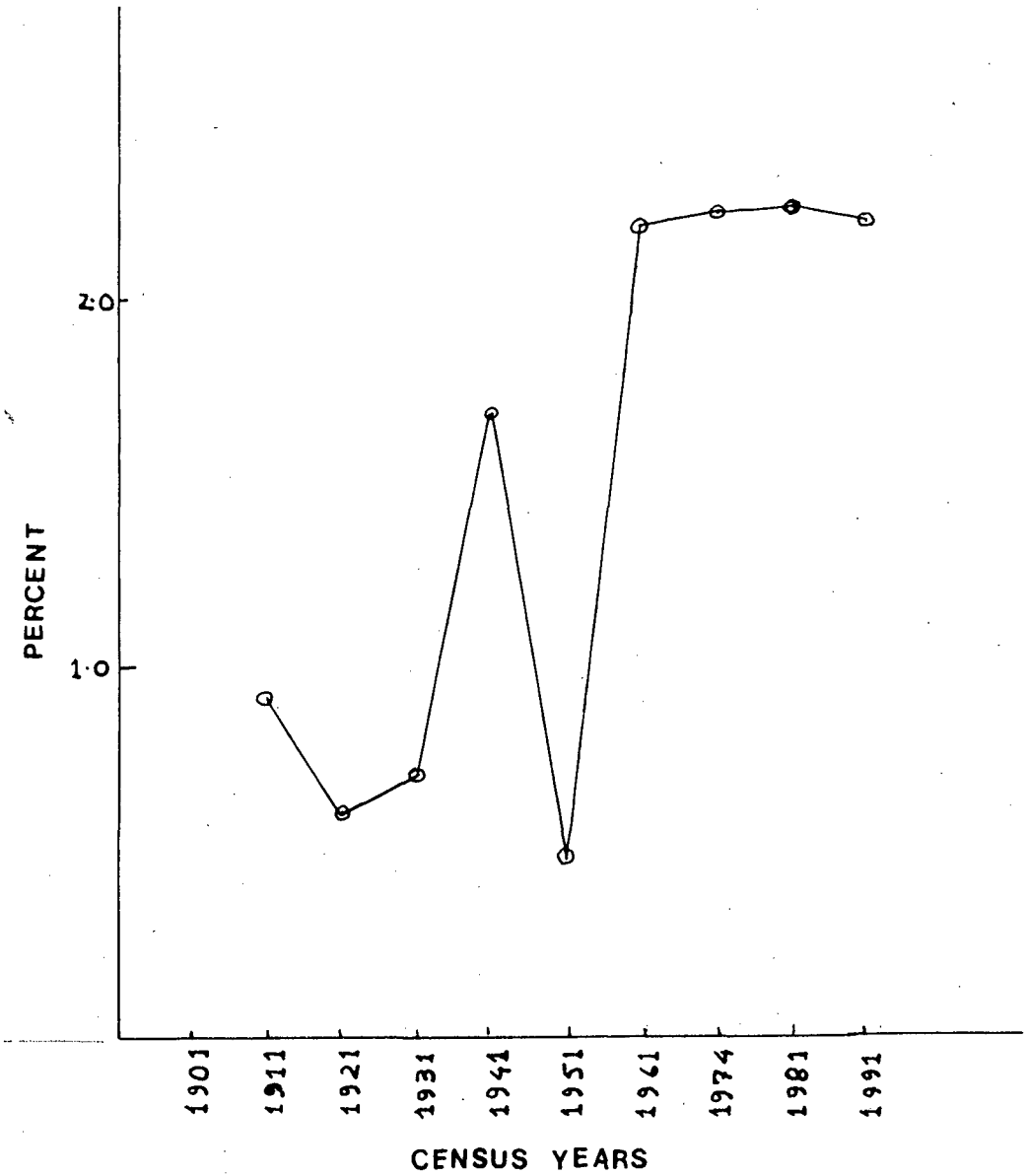

FIGURE – 3.2. INTER–CENSAL EXPONENTIAL GROWTH RATE, 1901–91

Source: BBS (1991) P. 45

cent in 1974 and 13.22 per cent in 1981. During 1961 - 74, the urban population in Bangladesh living in places 20,000 population and over increased by 169.35 per cent and grew at a rate of 7.61 per cent per annum, compared to 2.1 per cent growth rate of the rest of the country. So, we find that the intercensal growth rates of population, during 1961-1974 is 2.48 per cent and 2.3 per cent in 1974-81 (Fig. 3.1 & 3.2). The definition of the Census Commission of Bangladesh, produces a higher rate of urbanization.

The most phenomenal growth of urban population took place during 1961-74, This exceptionally high urban

Table: 3.2

Urban Population Projection in Bangladesh, 1981-2015

Year	Total Population (m)	Rural Population (m)	Urban Population (m)	Urban Growth (% p.a)	Level of Urbanization (share of Urban Population)
1981	90.0	76.5	13.5	10.3	15.1
1985	100.0	83.1	17.5	6.5	17.4
1990	113.7	90.8	22.9	5.4	20.1
1995	126.8	97.4	29.4	5.0	23.2
2000	141.1	103.8	37.3	4.8	26.4
2005	155.8	109.4	46.4	4.4	29.8
2010	170.5	113.7	56.8	4.0	33.3
2015	184.6	116.7	67.9	3.6	36.8

Source: World Bank, **Bangladesh Economic and Social Development Prospects**, Vol.III (Report No.5409), April 1985, Table 9.8, p.126.

population growth (137.57 per cent) can be explained on several counts. First, migrants from rural areas came into the cities for employment and were absorbed mostly in urban informal sector. As much as 38 per cent of the total national urban population of 1974 have been estimated to have come from rural areas. Second, an abrupt and dynamic change followed the Liberation War of 1971 and its resultant political changeover seem to have some impact on urbanisation. Third, after the independence, new political government has initiated new policy including industrial development in the major urban centres. Thus, a huge number of people from rural areas to urban areas to find urban secondary and tertiary employment. The income disparities between rural and urban areas may also have caused the resultant forces of attraction. Finally, we have also observed that the level of urban growth in Bangladesh is unquestionably rising, at both national and regional levels.

3.1.0. Distribution of Urban Centres by Size Classes:

The distributional pattern of urban population by the size categories shows an increasing concentration in large urban centres. The changing level of urbanization can also be assessed by comparing the number of places of given size and the distribution of population among them (Table 3.3). In 1901, out of the total 48 urban centres of the country, 95.83 per cent had less than 25,000 population, and the urban centres were 46, and only 4.16 per cent (only two urban centres) of the urban centres had population of

Table 3.3

Percentage Distribution of Urban Places by size of Place and by Census Years (1901-81), Bangladesh

Distribution of Urban Places									
Size of Place	1901	1911	1921	1931	1941	1951	1961	1974	1981
Over 100,000	4.16 (2)	4.16 (2)	4.00 (2)	3.44 (2)	3.39 (2)	3.03 (2)	4.88 (4)	5.45 (6)	17.50 (14)
50,000 -99,999	-	-	-	-	3.39 (2)	4.55 (3)	7.32 (6)	12.73 (14)	26.25 (21)
25,000 -49,949	-	-	10.00 (5)	12.06 (7)	22.03 (13)	22.21 (14)	18.29 (15)	20.91 (23)	32.50 (26)
10,000 - 24,499	43.75 (21)	47.91 (23)	40.00 (20)	36.20 (21)	33.90 (20)	30.30 (20)	29.27 (24)	46.36 (51)	20.00 (16)
5,000 - 9,999	31.25 (15)	27.08 (13)	26.00 (13)	29.31 (17)	32.20 (19)	30.30 (20)	28.05 (23)	10.91 (12)	1.25 (1)
<5,000	20.83 (10)	20.83 (10)	20.00 (10)	18.96 (11)	5.08 (3)	10.61 (7)	12.20 (10)	3.64 (4)	2.5 (2)
No. of urban Places	48	48	50	58	59	66	82	110	80*
Percent	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100

Notes: * Data has been collected excludes Non-Muncipal Upazilla head quarters covered under extended definition.

Source: Government of Bangladesh,1991, Bangladesh Population Census Reports and Government of Pakistan, 1961, Census of Pakistan 1961, vol.2 Home affairs Division, Ministry of Home and Kashmir Affairs, Karachi, Pakistan .

100,000 and over. In 1911 the total urban centres were the same in all categories of urban centres. Only two urban centres (47.91%) increased from the 10,000 - 24,999 population size class. Interchangeably, two urban centres decreases (27.08%) from the 5,000 - 9,999 population size class. In 1921, there is no significant difference in urban centres (only two urban centres increases in overall population size classes), five urban centres emerged in this period with population between 25,000 - 49,999. There were no urban centres in the size class between 50,000 - 99,000 upto 1931. Therefore, the urban centres remained almost unchanged till 1931. However, the profile somewhat changed in 1941. Out of the 59 places designated as urban centres, 42 urban centres had a population category below 25,000 and only four urban centres (6.78 per cent) were in 50,000 - 99,999 and over 100,000 population. So, the number of urban places having 25,000 - 49,999 population also registered a significant increase from 10 per cent in 1921 to 22.03 per cent in 1941. For the first time in 1941 there were two urban centres (3.39 per cent) which had a population between 50,000 - 99,999. There were only two 2 urban centres in the size class between 100,000 - 99,999 between 1901-1951 . But after this period, their number increased. The above profile of distribution of urban centres remained almost the same for the next census years. The highest numbers of urban centres twenty each were in 10,000 - 24,999 population size classes and 5,000 - 9,999 population size classes in 1951.

From 1951 to 1961, 16 urban centres were added. In 1961 the urban centres increased in all the population size classes. Before 1961, in the 50,000 - 99,999 and the 1,00,000 population size classes the numbers of urban centres changed slightly (4.55%). But the urban centres increased in other size classes. However, the number of urban centres having 50,000 - 99,999 population registered a considerable increase from 4.55% in 1951 to 7.32 per cent in 1961, 12.73% per cent in 1974 and 26.25 per cent in 1981. On the other hand the cities with more than 100,000 population increased from 2 to 14 in numbers and their respective percentage change from 3.03 to 17.50 during 1951 and 1981. In 1974, there was a considerable change in the 100,000 - 24,999 population size classes and the percentage of urban centres increased from 24 (29.27% per cent) to 51 (46.36% per cent) between 1961 to 1974. During the first half of the century there had been the predominance of small sized urban centres in the size classes below 25,000 population covering about 93 per cent of the total urban population of the country. Medium sized urban centres emerged in the middle of the present century and they covered a very low per cent in their size classes of population between the middle half of the century. But, after that the per cent of urban centres has been increasing in different size classes.

3.2.0. Distribution of Urban Population by Size-Classes:

The urbanization processes in Bangladesh is a rapidly growing phenomenon but the number of urban settlements has

not increased at the same pace through the total urban population increased near about 19 times (i.e. 702,055 to 13,228,000 population) between 1901 to 1991. This is despite the fact that the bulk of new centres emerged because of different factors (i.e. industrial and tertiary sectors of employment generation).

From the Table-3.4, it can be gleaned that proportionately more people were living in bigger urban centres 100,000 population size class, i.e., Class I Cities in each successive census year, particularly since 1961. Population increased in this category 33.57 per cent in 1901 to 73.3 per cent in 1981. The continuous growth of urban population started from 1961 to 1981 and their urban population increased 45.86 per cent in 1961, 57.26 per cent in 1974. On the other hand except in this category, the proportion of population in other urban centres grew less in different size classes of population. So, we have seen from the above table that the urban population recorded as 47.67 per cent in 1901 and their decreasing rate 3.5 in 1981 in urban centres having less than 25,000 population size classes. The proportion of people living in urban places having less than 10,000 population was recorded as 18.74 per cent in 1901, 8.56 per cent in 1951, 7.77 per cent in 1961, 1.67 per cent in 1974 and only 0.7 per cent in 1981. Whereas, there were no urban centres of 50,000 -99,999 population till 1931. This category accounted for 7.43 per cent of the total urban population in 1941, 12.01 per cent in 1951,

contained 73.3 per cent of total urban population. The corresponding figure was only 33.57 per cent in 1901. (Table - 3.3 and 3.4). This clearly shows a different pattern from what we observed during the period 1901 - 1931, 1931 - 1951 and 1951 - 1981.

3.3.0. Regional Pattern of Urban Growth :

This section analyses the regional pattern of urban growth in Bangladesh between 1951 to 1981 census years. An attempt will also be made to find out the levels and process of urbanization in Bangladesh with the help of different geographical and statistical methods.

The most conspicuous feature of today's population growth is accelerated growth of urbanization. In several decades of history, population and cities have been growing but the tempo and dimension of recent years have never been equalled. The increase in the number and size of cities is closely associated with the economic development of the region and subsequent shift toward the employment in secondary and tertiary activities. This type of shift is the major factor for urban growth from rural areas. The major attraction for the rural people is towards large cities. So, the large and big industrial cities are growing faster than the medium and small towns. The regional population growth pattern is found different. In this respect the striking feature of the urbanization process in the country is the considerable inter-regional and intra - regional variations

in the growth of urban population as well as in the levels of urbanization along with the uneven growth of population in towns and cities.

We know that spatial or regional distribution of urban areas determines their spatial relationship and consequently spatial interaction. Every settlement that lies at remote locations are likely to be less connected with other population settlements and hence less affected by the consequences of the economic development at the regional levels. On the other hand, population settlements that lie in close proximity to each other are more receptive to the growth impulses from neighbouring poorer settlements. This process are acting at various regional levels.

In studying the spatial attributes of urbanization of towns on a regional basis, adequate cognizance should be taken of the historical patterns and process of urbanization. Towns or cities are not static entities but are dynamic, in that they are constantly undergoing change. Changes associated with urban settlements can be of a multitudinous variety, but it is the urban demographic change that is of utmost importance, for among other things, it is a consequence of the pattern of economic change. Hence, spatial patterns of urban demographic change bear semblance to spatial patterns of urban economic change. Urban growth however, is not uniform, it is differential and hence urbanization proceeds at an uneven pace.

As the national urban population grows, most individual urban areas tend to grow as well and the number or urban areas also increase. So that the share of any one urban area in the national urban population falls. However, it is important to note that this does not prevent the widespread phenomena in which, as urbanization increases, a higher proportion of the urban population lives an increasing number of relatively large urban areas.

The accelerated growth of urbanization in Bangladesh in recent time has not been evenly distributed among urban centres. The capital city and other large urban centres, through their own natural population increase and rural - urban migration have been gaining substantial proportions of the urban population increases.

3.3.1. Urban Population Growth at Regional levels:

Urban growth with in the regions reveals interesting spatial pattern. It was noted above that the backward regions,in general, have recorded very high growth in their urban population in recent years. The population growth rate reveals the levels of urbaniztion for the micro-regions. Region wise distribution of urbanization can be analysed in two ways by either taking the distribution of urban places or by the percentage distribution of urban population. This will be done here both on the basis of places and population, taking development regions and geographical regions as analytical units accordingly.

The present section will examine the urban - rural composition of the country and the percentage distribution of the urban population growth in the regions (former major districts of the country which we have grouped into four administrative divisions. The government of Bangladesh set - up these divisions for administrative convenience. They are Dhaka, Chittagong, Khulna and Rajshani Divisions. For our present analysis we have selected 20 major regions (former greater districts) having a number of small and medium - sized urban centres. These small medium - sized urban centres were classified in the following groups on the basis of 1951 census.[5] After some modification in group III (population 25,000 and under 50,000 in respect to 20,000 to 50,000) the following categories were analyzed:

Class I cities :100 ,000 plus population.
Class II Towns : 50.000 and under 100,000 population.
Class III Towns: 25,000 and under 50,000 population.
Class IV under 10,000 population.

The urban areas in class I towns were designated as "cites" and the urban areas belonging to the remaining categories, are called "towns".

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5. The definition is employed by the Census Commission of Bangladesh, 1981.

According to Ashish Bose[6], the size of a medium city should obviously have a relation with the total population as well as the total urban population of the country concerned, apart from the geographical area involved. Indian census classification of urban areas needs to be modified in view of the scale and level of urbanization in India and Bose suggests the following classification.

Class I cities (a) One Million and over population.
(b) 500,000 to 1,000,000
(c) 200,000 to 500,000

Class II towns: 50,000 to 200,000.

Class III Towns : 20,000 to 50,000

Class IV Towns (semi-urban areas) :below 20,000.

It may be mentioned here that the censuses of Pakistan and Bangladesh have adopted the same classification as in the Indian census with very minor modifications (e.g. their urban class III covers a population of 25,00 to 50,000 instead of 20,000 to 50,000 adopted in the Indian census. [7]

In 1961, the census of India authorities defined the term 'urban places' based on the criteria of places having

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6. Census of Pakistan, 1951, East Pakistan, 1951, East Pakistan Tables & Report, Home Affairs (Ministry of Home & Kashmir Affairs), Karachi.

7. See in Details in Ashish Bose (1982), "The Role of Medium-Size Cities in the Urbanization Process". Economic and Social Commission for Asia and the Pacific, Third Asian and Pacific Population Conference, 20-29 September, 1982, Colombo, pp.5-6

urban local bodies such as a municipality, municipal corporation, a cantonment board or a notified area committee. It also includes other places which have the four components [8] :

a) a density of not less than 1000 to the square mile (or 400 Per Sq. Km).

b) a population of at least 5000.

c) three-fourths of the occupations of working population should be outside agriculture,

d) the place should have, a few pronounced urban characteristics, newly founded industrial areas, large housing settlements with all civic amenities.

The definition of urban areas in Bangladesh is complex. Following are the three main problems,[9].

1. Absence of a clear-cut definition of urban areas in Censuses

2. Nearest equivalent to an urban place is the locality designated as city, town, urban and "Paurashaba" (Municipality) area.

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8. See Rafiqui Huda Chaudhury, "Urbanization in Bangladesh", Dhaka, University of Dhaka, 1980, pp.10-12.

9. See Saleheen Mesbah-US, Sharif A.H.M. Raihan and Huq Sheikh Md. Monzurul (1990), "Rural-Urban Migration and Urbanization in Bangladesh", in Bui Dang Ha Doah, edited Urbanization and Geographical Distribution of Population Proceedings of the Project Initiating Meeting, Pusan Korea, 29 September030 October 1989, Social Survey Research Centre, Pusan national University and Committee for International Cooperation in national Research in Demography (CICRED), 1990, P. 61.

3. All "Paurashaba" areas have some characteristics generally regarded as urban, but some of these areas are geographically extensive with a population more rural than urban.

If the "Paurashaba" areas are taken as the criterion of urban places, then the urban population gives a fairly low percentage level of total population. In the 1981 population census of Bangladesh, an urban area has the following connotation. The term normally includes places having "Paurashaba" , a Town Committee or a Cantonment Board. In general an urban area will be a concentration of population of at least 5000 persons in continuous collection of houses where the community sense is well developed and the community maintains public utilities, such as roads, street lighting, water supply and sanitary arrangements. These places are generally non-agricultural and have a non-agricultural labour concentration.

There are twenty regions and four major urban centres in Bangladesh in census years 1951-81 (Table-3.5). The table represents the regional distribution of urban centres (above 5,000 population) of twenty regions in Bangladesh. It can be seen from the table that the distribution of the major urban centres were more or less evenly spread among the regions during the census years 1951-81. By looking at the distribution of twenty leading urban centres of Bangladesh, one may tend to say that the urbanization is much more wide spread in 1981 than 1951 census. From the

Table 3.5

Number and Percentage Distribution of Urban Centres in Bangladesh, 1951-1981

Regions	1951(%)	1961(%)	1974(%)	1981(%)
1. Chittagong	4 (5.88)	5 (5.62)	9 (6.92)	23 (6.67)
2. CHT	- -	3 (3.37)	4 (3.08)	13 (3.77)
3. Comilla	3 (4.41)	4 (4.49)	6 (4.62)	19 (5.51)
4. Noakhali	2 (2.94)	3 (3.37)	4 (3.08)	14 (4.06)
5. Sylhet	5 (7.35)	6 (6.74)	7 (5.38)	19 (5.51)
6. Dhaka	5 (7.35)	9 (10.11)	27 (20.77)	37 (10.72)
7. Faridpur	3 (4.41)	4 (4.49)	4 (3.08)	13 (3.77)
8. Jamalpur	2 (2.94)	2 (2.25)	2 (1.54)	8 (2.32)
9. Mymensingh	7 (10.29)	7 (7.87)	8 (6.15)	29 (8.41)
10. Tangail	1 (1.47)	1 (1.12)	3 (2.31)	8 (2.32)
11. Barisal	5 (7.35)	5 (5.62)	4 (3.08)	22 (6.38)
12. Jessore	4 (5.88)	6 (6.74)	6 (4.62)	15 (4.35)
13. Khulna	5 (7.35)	7 (7.87)	5 (3.85)	20 (5.80)
14. Kushtia	4 (5.88)	6 (6.74)	12 (9.23)	13 (3.77)
15. Patuakhali	1 (1.47)	1 (1.12)	2 (1.54)	11 (3.77)
16. Bogra	3 (4.41)	3 (3.37)	4 (3.08)	10 (2.90)
17. Dinajpur	3 (4.41)	3 (3.37)	6 (4.62)	13 (2.90)
18. Pabna	2 (2.94)	3 (3.37)	6 (4.62)	13 (3.77)
19. Rajshahi	4 (5.88)	4 (4.49)	5 (3.85)	17 (4.93)
20. Rangpur	6 (8.82)	6 (6.74)	6 (4.62)	28 (8.12)
Bangladesh	69 (100.0)	88 (100.0)	130 (100.0)	345 (100.0)

Notes : The urban agglomerations have been considered as single urban units and consequently, the figures reported here are different from the corresponding figures reported in respective census.

Source : 1. Census of Pakistan, 1951 and 1961, Government of Pakistan, East Bengal Tables, Vol.3 and Vol.3 respectively, Home Affairs Division, Ministry of Home Affairs, Karachi, Pakistan.

2. Bangladesh Bureau of Statistics (BBS), Bangladesh Population Census, 1974 and Bangladesh Population Census, 1981, Dhaka, Bangladesh.

table we also observe that the total urban centres of Bangladesh were 69 in 1951, 88 in 1961, 130 in 1974 and 345 in 1981. This type of urban growth reveals that urban centres are growing in time and space variation. Some major urban centres are growing fast and few are growing very slowly. In 1951 the urban centres were mostly spread in Mymensingh region (10.29%), whereas Tangail and Patuakhali regions had few urban centres. In 1961, the leading urban centres were spread in Dhaka and Tangail region and Patuakhali regions had few urban centres. In 1974 also the urban centres was grew in Dhaka regions (20.77%) and Jamalpur and Patuakhali again had few. In 1981, 10.72 percent urban centres were in Dhaka regions which was less than in 1974. Tangail and Jamalpur regions had only 2.32% out of 345 urban centres of the country.

Table-3.6 shows the percentage distribution of urban centres by size-categories between 1951-81. The urban centres can be divided into three categories, High(H), Medium (M) and Low(L) and these categories were measured by the percentage of urban centres e.g. 8.01 and above (high), 4.01-8.00 (medium) and 1.01-4.00 (low) categories.

The Table-3.6 gives us the picture that in 1951, there were only two major urban regions in the high category, namely Mymensingh and Rangpur, twelve major urban regions in the medium and the rest five urban regions were in the low category among the twenty regions in Bangladesh. In 1961, only one region (Dhaka) was in the highest position, eleven

urban regions in the medium and eight urban regions in the lowest position. In 1974, there were two urban regions (e.g. Dhaka, Kushtia) in the highest category.

Table: 3.6

Percentage Distribution of Major Urban Centres by Size Categories (in Numbers), 1951-81

Census Years	High(H) 8.01 +	Medium(M) 4.01-8.00	Low(L) 1.01-4.00
1951	Mymensingh, Rangpur	Chittagong*, Comilla, Sylhet, Dhaka Faridpur, Bapisal, Jessore, Khulna, Khustia, Bogra Dinajpur, Rajshahi	Noakhali, Jamalpur, Tangail, Patuakhali, Pabna
1961	Dhaka	Chittagong, Comilla, Sylhet, Faridpur, Mymensingh, Barisal, Jessore, Khulna, Khustia, Rajshahi, Rangpur	Chittagong Hill Tracts (CHT), Noakhali, Patuakhali, Bogra, Dinajpur, Pabna,
1974	Dhaka Khushtia	Chittagong, Comilla, Sylhet, Memensingh, Jessore, Dinajpur Pabna, Rangpur	CHT, Noakhali, Faridpur Jamalpur, Tangail, Barisal, Khulna, Patuakhali,
1981	Dhaka, Memensingh, Rangpur	Chittagong, Comilla, Noakhali, Sylhet, Barisal, Jessore Khulna, Rajshahi	Bogra,, Rajshahi, CHT, Faridpur, Jamalpur, Tangail, Khustia, Patuakhali, Bogra, Dinajpur, Pabna.

Source: Reproduced from Table 3.5 (* including Chittagong Hill Tracts-CHT)

eight urban regions were in the medium and ten urban regions were in the lowest category. In 1981, there were three major urban regions in the highest, eight in the medium and rest

nine were in the lowest category. The major findings reveal that for the time being the number of urban centres were growing in the highest position as well as in the lowest.

Table 3.7 shows the variations in urban centres among the regions during 1951-1981.

Table: 3.7

Distribution of Urban Centres in Bangladesh, 1951-1981

	1951-61	1961-74	1974-81
n*	88	130	345
$\bar{X}$	4.4	6.5	17.25
σ	2.06	5.24	7.35
V(%)	43.98	80.60	42.63

Note : * Number of urban centres (Major 20 districts)

Source: Compiled from Table 3.5

We see from Table 3.7 that the urban centres varied between 1951-61, 1961-74 and 1974-81. For these periods, values of 'V' and value $\bar{X}$ (mean) varied from 1951-61 to 1974-81. So in 1951-61, the variation rate (V) was 43.98 percent in 1951-61 ($\bar{X}$ = 4.4), 80.60 percent in 1961-74 and 42.63 percent in 1974-81. We see that the highest variation was 80.60 percent in 1961-74 and the lowest was 42.63 percent in 1974-81 during these three decades.

3.3.2. Density of Urban Centres at Regional Levels

The density of urban centres is defined as the number of urban centres divided by urban area per square kilometers for the country as a whole. In Third World countries like Bangladesh town density is very low. Towns are not distributed evenly among the regions.

The present sub-section analyses the density of urban centres among the regions of Bangladesh during 1951-1981 census period and town density can be measured by the following formula in respect to the definition of density of town.

$$\text{Density of Town (DT)} = \frac{\text{Number of Urban Centres (above 5,000 Pop.)}}{\text{Urban Area (in Km}^2\text{)}}$$

where, DT is the Density of Town.

The Table 3.8 shows that the national density of towns in 1951 was 0.08, in 1961 and 1974 was 0.10, and in 1981 was 0.10. Thus their percentage increase* was as follows:

1951-1961, 25%

1961-1971, there was no increasing tendency

1974-1981, 10%

1951-1981, 37.5%

Thus the density of towns varied from census to census with respect to the distribution of population. Thus, we

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* Percentage increase $= \frac{\text{DT 1961-DT 1951}}{\text{DT 1951}} \times 100$

Table 3.8
Density of Urban Centres by Total Urban Area (in Km_2) in Regions of Bangladesh (1951-1961)

Regions	1951	1961	1974	1981
1. Chittagong	0.03	0.03	0.06	0.03
2. CHT	-	-	0.06	0.09
3. Comilla	0.08	0.11	0.08	0.19
4. Noakhali	0.26	0.38	0.19	0.47
5. Sylhet	0.20	0.24	0.19	0.12
6. Dhaka	0.04	0.07	0.14	0.06
7. Faridpur	0.08	0.11	0.10	0.17
8. Jamalpur	0.03	0.03	0.03	0.12
9. Mymensingh	0.12	0.14	0.11	0.21
10. Tangail	0.08	0.08	0.10	0.15
11. Barisal	0.11	0.11	0.09	0.37
12. Jessore	0.11	0.16	0.08	0.09
13. Khulna	0.09	0.12	0.07	0.03
14. Kushtia	0.19	0.29	0.21	0.06
15. Patuakhali	0.19	0.19	0.05	0.28
16. Bogra	0.23	0.23	0.31	0.22
17. Dinajpur	0.07	0.07	0.15	0.20
18. Pabna	0.06	0.10	0.13	0.14
19. Rajshahi	0.12	0.12	0.13	0.12
20. Rangpur	0.10	0.10	0.05	0.19
Bangladesh	0.08	0.10	0.10	0.11

Notes : Same as Table -3.5

Sources : Based on Table - 3.5 and Appendix - 3.1.

have found from our experience that developed regions had a very high density of towns. It is paradoxical because the planned city has low density on the other hand backward or less developed regional towns have a very high density. But it depends on the number of urban centres in the region.

Thus, in the case of Bangladesh regions which have the more numbers of urban centre, highest density of towns and the less developed regions have lower density of towns. We have found from Table-3.8 that in 1951, the highest density of towns was in the Noakhali region (0.26), and the least density of towns was in Chittagong and Jamalpur regions (0.03) and CHT had no town. In 1961, Noakhali belonged to the highest and Chittagong and Jamalpur regions the least density of towns in the country. In 1974, the highest density of towns was in the Bogra region and Jamalpur had the lowest. In 1981 again, Noakhali region had the highest and Chittagong and Khulna regions had the lowest density of town.

From the above discussion we find that the backward regions have the highest density of town (Noakhali, Jamalpur etc.) and developed regions have the lowest density of town (Chittagong, Dhaka etc.)

3.3.3. Urban Population Growth and Density of Urban Population at Regional Levels :

The patern of the urban population growth not only has an impact on the density of urban population per square kilometre of land area ,but also affects the regional

patterns in urban population growth. The salient features of these two aspects are discussed below.

Despite the change in the overall urban population density in the country, its regional patterns in the recent decades has shown a change particularly in the post independent period, this change is about double. In 1951 the urban population density was 2161 ($\bar{X}$ = 2366 and σ = 733), whereas in 1981 the urban population density about double, 4033 ($\bar{X}$ = 4685, σ = 2732). However, there was also a significant difference in the regional levels registering urban population density below the country's average in 1951, 1961 ($\bar{X}$ = 3273, σ = 1091), but in 1974 the density of urban population is more than the country's average (Table 3.9).

The spatial pattern of urban population density varies from census to census. It also varies within the regions. The Table shows that in 1951, urban population density was the highest in the Mymensingh, Dhaka, Comilla and Barisal regions, where respective figures were 3684, 3355, 3214 and 2986 persons per sq. km. Whereas in Khulna and Jessore regions the urban population density was very low 1206 and 1016 persons per sq. km.) than other regions of the country. In 1961 and 1974, urban population density was more in Dhaka region (13610 persons per sq. km) but in Patuakhali, Chittagong Hill Tracts it was the lowest (1099 and (846 persons per sq. km.) in 1974. In 1981, Noakhali and Barisal regions

Table: 3.9

Density of Urban Population Per Sq. Km in Urban Land Area, (Region wise), 1951-1981

Regions	1951 ('R')	1961 ('R')	1974 ('R')	1981('R'
1. Chittagong	2033 (11)	2562 (13)	6985 (3)	2425 (1)
2. CHT	-	-	846 (20)	1433 (2)
3. Comilla	3214 (3)	3819 (4)	3407 (12)	5687 (5)
4. Noakhali	2821 (5)	4359 (3)	3426 (11)	13779 (1)
5. Sylhet	2490 8)	2898 (10)	3763 (9)	3208 (1)
6. Dhaka	3355 (2)	6155 (1)	13610 (1)	5827 (4)
7. Faridpur	1593 (14)	2170 (14)	3123 (13)	4254 (1)
8. Jamalpur	-	-	1630 (18)	3115 (1)
9. Mymensingh	3684 (1)	4858 (2)	4611 (7)	4704 (7)
10. Tangail	-	-	3841 (8)	3376 (1)
11. Barisal	2986 (4)	2692 (11)	3542 (10)	9458 (2)
12. Jessore	1016 (16)	2060 (15)	2595 (16)	2595 (1)
13. Khulna	1206 (15)	3007 (9)	8133 (2)	6424 (3)
14. Kushtia	1971 (12)	3029 (8)	2935 (15)	1442 (1)
15. Patuakhali	-	-	1099 (19)	4278 (1)
16. Bogra	2769 (6)	3615 (5)	6769 (5)	4552 (8)
17. Dinajpur	1851 (13)	1731 (16)	3111 (14)	4190 (1)
18. Pabna	2212 (9)	3205 (7)	5022 (6)	4342 (9)
19. Rajshahi	2515 (7)	3550 (6)	6921 (4)	3782 (1)
20. Rangpur	2140 (10)	2659 (12)	2341 (17)	4820 (6)
Bangladesh	2171	3148	5402	4033
Mean ($\bar{X}$)	2366	3273	4386	4685
S.D. (σ)	733	1091	2875	2732

Notes: 1 Density of urban population measured by total urban population divided by total uban area (in Km_2) of the region.

Source: Compiled from the cens us tables, BBS, 1981. [Appendix - 5] and 5.2]

2.'R' = Rank of the order of Regions.

have shown that urban population was the highest (13779 and 9458 persons per sq. km. respectively) and Khustia and Chittagong Hill Tracts had the lowest (1442 and 1433 persons per sq. km.) among the regions of the country. These figures are below the country's average.

We conclude from these above table that urban population density varies from census to census as well as from region to region, except in the Dhaka region.

3.3.4 Urban Population Growth at Regional Levels in Terms of Total Urban Area of the Region:

Rapid urban growth between 1951 to 1981 is associated with periods of intense socio-economic and political change in Bangladesh, resulting in an increase in the number of urban centres of all sizes as well as the expansion of urban land with respect to population growth in these urban centres. Contributing to rapid post-partition urbanisation were internal (rural-urban) and international [India-Bangladesh (Former East Pakistan) migrants. After Independence (from 1972) the country's internal migration significantly increased and presently the urban population growth rate is much higher than in the past.

However, the urban population growth in regional levels as measured by the total urban area may be an indication for the urban growth analysis. The discussion on the dynamics of growth so far has been based on the index of simple growth which implicitly assumes the increase in urban population to

be a linear homogenous function of the base year (previous census year) population. One may wonder whether the regional pattern emerging from the analysis would be different if other measures of growth-rate that assume annual or continuous adjustment in the population base are used in analysing the urban growth pattern (Table 3.10).

As opposed to the assumption behind all the urban population growth indicators mentioned above in the first chapter, can be postulate that the dynamics of development in towns or cities operate not through their population but their land area base. This would require increases in urban population to be related to urban land area. Based on this analytical premise, one can define the index of urban growth[10] as follows:

$$g = \frac{X_2 - X_1}{(A_1 + A_2)/2}$$

Where X_2 and X_1 are the populations of the urban centres or regions under consideration in the terminal and base (census) years, while A_2 and A_1 are the corresponding area figures. When one is thinking in terms of providing residential and working space, economic and other infrastructure, public utilities etc. to a growing urban population, it is important that our understanding of urban

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10. See, Vasant Kumar, Bawa (1985), "Indian Metropolis: Urbanization, Planning & Management", Inter-India Publications, New Delhi, India, p.31.

growth takes cognisance of the space problem-the problem of congestion in urban land area.[11]

The urban population growth by urban area in all twenty regions is examined in this section. It can be seen from the Table 3.10 that the urban population growth of the major urban centres are not evenly spread among the regions during the census years 1951-61, 1961-74 and 1974-81. It also unevenly varied during those census years. So we have seen that in 1951-61 census years the urban population growth was 0.98 ($\bar{X}$ = 0.91, σ = 0.71), whereas in 1974-81, the urban population growth rate was 2.73 per sq. km. of land area ($\bar{X}$ = 3.44, σ = 2.59). But the variation of urban population growth was much higher during 1961-74 census periods and the growth of urban population was 4.07 ($\bar{X}$ = 3.06, σ = 2.61) per sq. km. of urban land area. On the other hand, if we see the 1951-81 census periods, the urban population growth was 5.54 ($\bar{X}$ = 6.42, σ = 4.10) per sq. km. of urban land area. So, it can be said that the overall urban population growth varied during 1951-61 to 1951-81 census periods and the rate of variation was higher in the present decades.

It was already mentioned above that the urban population growth varies not only from the census to census, it

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11. The Study by A. Kundu and Moonis Raza (1982) has computed urban growth rates using the above formulation for the towns and cities and other urban centres, taking the National Sample Survey regions as the basic geographical units, which brings out the difference in urban growth in different size-classes and different regions very sharply.

Table: 3.10

Variation in Rural Urban Population Growth in terms of Total Urban Area, (Regionwise) during 1951-61, 1961-74, 1974-1981 and 1951-1981

Regions	Population Growth Variation				
	1951-61 Urban	1961-74 Urban	1974-81 Urban	1951-81 Urban	1951-81 Rural
1. Chittagong	0.53	4.42	1.63	3.32	0.26
2. CHT	-	0.49	1.48	-	-
3. Comilla	0.60	2.18	3.37	6.56	0.40
4. Noakhali	1.54	2.72	13.13	20.69	0.22
5. Sylhet	0.41	2.24	3.71	4.85	0.17
6. Dhaka	2.80	11.72	2.98	8.79	0.35
7. Faridpur	0.58	1.18	3.52	4.78	0.26
8. Jamalpur	-	-	1.48	-	-
9. Mymensingh	1.17	1.60	3.01	5.03	0.02
10. Tangail	-	-	1.62	-	-
11. Barisal	-0.29	0.99	7.48	8.26	0.07
12. Jessore	1.04	2.12	2.01	3.90	0.30
13. Khulna	1.80	6.63	3.19	8.66	0.11
14. Kushtia	1.06	2.68	1.15	2.32	0.33
15. Patuakhali	-	-	3.35	-	-
16. Bogra	0.85	3.15	3.99	5.80	0.33
17. Dinajpur	-0.12	1.22	2.93	3.68	0.25
18. Pabna	0.99	3.34	2.49	5.36	0.32
19. Rajshahi	1.04	3.98	3.10	5.17	0.28
20. Rangpur	0.52	1.34	3.23	5.62	0.32
21. Bangladesh	0.98	4.07	2.73	5.54	0.24
	0.91	3.06	3.44	6.42	
	0.71	2.61	2.59	4.10	

Notes: Rural population growth variation in the comilla regious as well as the Dhaka Kushtia, Bogra and Dinajpur regions. Other regions of the country's rural population growth variation is low as the context of natural and rural-urban migration in between the regions and intra-regional movement of the population

Source: Computed from Appendix- 5.1 and 5.2

also varies on a regional basis. So,it can be seen from the Table 3.10 that the urban population growth was higher in the largest city of Dhaka and the growth was 2.80 per sq. km. of urban land area during 1951-61. In Khulna as well as Noakhali urban population growth was also significant (1.80 and 1.54 per sq. km of urban land area). There are two distinctive negative figures we have seen in case of Dinajpur and Barisal regions and their urban population growth was found - 0.12 and - 0.29 per sq. km. of urban land area. The table also shows that in Rangpur and Chittagong regions urban centres population growth was very low (0. 52 and 0.53 respectively) among the regions during 1951-61 census years. In 1961-74 census periods the urban population growth was four times better than that of 1951-61 census in the national as well as the regional variation figures. In these periods, in the Dhaka region urban population growth was significantly varied (11.72 per sq. km. land area) than that of 1951-61 census periods. The Table also shows that during 1961-74, second and third largest city of Bangladesh i.e., Chittagong and Khulna grew faster than the 1951-61 census years. In all other regions growth was also better than in the 1951-61 period. In 1974-81 census periods urban population growth was less than that of 1961-74 census periods. In regional levels we have seen that the urban population was varied in all of the urban centres. The significant urban population growth was found in Noakhali regions and their respective figures was 13.13 per sq. km of urban land area, whereas in 1951-61 and the 1961-74 the urban population

Table: 3.11

Increase in Urban Population Per Sq. Km. of Urban Land Area (above 5,000 Population) in Region wise (1951-61, 1961-74, 1974-81) and 1951-81)

Regions	Urban Population Increase (in Per Sq. Km)*			
	1951-61	1961-74	1974-81	1951-81
1. Chittagong	0.53	4.42	0.98	2.01
2. CHT	-	0.49	1.06	-
3. Comilla	0.60	1.61	3.01	4.50
4. Noakhali	1.54	1.85	11.30	13.04
5. Sylhet	0.41	1.85	2.30	2.81
6. Dhaka	2.80	9.64	1.92	5.21
7. Faridpur	0.58	1.13	2.66	3.51
8. Jamalpur	-	-	1.48	-
9. Mymensingh	1.17	1.34	2.29	3.40
10. Tangail	-	-	1.26	-
11. Barisal	-0.29	0.97	6.68	7.22
12. Jessore	1.04	1.58	1.45	2.37
13. Khulna	1.80	5.84	2.38	3.58
14. Kushtia	1.06	1.83	0.72	1.26
15. Patuakhali	-	-	3.25	-
16. Bogra	0.85	3.15	2.58	3.74
17. Dinajpur	-0.12	1.26	2.34	3.01
18. Pabna	0.99	2.82	1.86	1.73
19. Rajshahi	1.04	3.76	1.96	3.19
20. Rangpur	0.52	1.01	2.93	3.95
Bangladesh	0.98	3.36	1.91	2.48

Notes: Increase in urban population measured by the following formula :

$$IUP = \frac{\text{Current Year. Pop. - Base Year Pop.}}{\text{Total urban land area (in } Km_2)}$$

Source : Computed from Appendix - 5.1 and 5.2

growth was found 1.54 and 2.72 respectively. It means in this regions urban growth was higher than in the previous census. We have also seen that during the 1951-81 census periods the Noakhali region had the highest growth of urban population among the regions of Bangladesh and the figure was 20.69 per sq. km. of land area. In the case of Dhaka region, except in 1961-74 in all other census periods the urban population growth was slightly better than other regions and it has been growing in the current periods. The overall picture for the urban population growth during 1951-81, shows that on an average urban population growth by per sq. km of urban area was higher in all the regions of the country. This means that population is increasing in largely the big urban centres of the regions because of rural-urban migration. This picture also shows that the neighbouring urban centres were very much connected with the large urban centres and therefore the big urban centres are growing fast in respect to the population growth and to the expansion of urban land area (Table 3.11).

3.3.5.0 Urban Population Growth in Regional Levels by the Distribution of Population:

The present section has been made to analysis the urban populaiton growth and their distribution at regional level. This section also attempts to trace the regional variation of urban population growth from 1901-1981.

3.3.5.1 Regional Distribution of Population in Major Urban Centres:

The pattern of urban population growth in different regions of Bangladesh gives interesting insights into the process of urbanization and also the socio-economic correlates. The urbanization trends in Bangladesh have to be seen in the context of the rapid transformation that is undergoing . The major urban centres of Bangladesh, especially the capital city (e.g. Dhaka) and the port and industrial cities (e.g. Chittagong, Khulna), have grown as a part of the Bangladesh economic centre with respect to the administrative, socio-political factors. The urban population is growing in the cities or towns in respect to rural-urban migration as well as the natural increase within the cities/towns.

The present section of the study focusses on the urban population growth at regional levels. In analysing the growht rates of individual towns/cities for the respective twenty regions of the country it should be borne in mind that absolute growth rates are at times deceptive. So, only percentage distribution of urban population growth can be shown in the following Table 3.12 during 1901 - 1981 for the major urban centres of the regions.

Despite the rapid growth of urbanization in Bangladesh, it is still low compared to the rest of world. The share of urban population in Bangladesh has grown steadily and gradually. It has increased in each decade. In 1981, the

share was more than four times its levels in the early censuses of this century. From 1901 to 1941, percentage of urban population increased on an average by only 0.34 percent per year, whereas from 1941 to 1981 it increased on an average of 0.72 per cent per year. From 1951 to 1974, it grew 0.70 percent and within the post-independent period 1974-81, it increased by 1.64 percent per year. Thus, urbanization in Bangladesh has been more rapid during recent decades than during the early decades. It can be pointed out that the independence of the country in December 1971 has accelerated much of the urbanization between 1961 and 1974. During this period the most phenomenal growth of urban population was recorded and the urban areas with a population of more than 100,000 grew at a much faster rate than average urban growth. Large cities are growing faster than medium and small towns.

However, it can be seen from Table 3.12 that the twenty major urban centres were more or less evenly spread among the regions during the census years 1901-1981. By looking at the distribution of twenty leading urban centres of Bangladesh, one may tend to say that the urbanization was much more wide spread in 1981, than 20 years earlier. But this is a misleading picture if we consider the regional distribution of the population living in these twenty urban centres. Based upon the estimates of urban population, about 15.18 percent of the total population of Bangladesh lived in urban concentrations of varying size in 1981. The figures,

Table: 3.12

Urban Population Growth (1901-1981)
(in Percentage)

Regions	1901	1911	1921	1931	1941	1951	1961	1974	1981
1. Chittagong	1.83	2.19	2.54	3.22	4.55	11.78	12.50	20.97	31.1
2. CHT	1.44	-	-	-	-	-	5.97	10.24	28.3
3. Comilla	2.31	2.35	2.33	2.41	4.37	3.09	3.17	4.24	8.1
4. Noakhali	0.61	0.53	0.54	1.40	1.08	1.06	1.42	5.13	10.8
5. Sylhet	-	-	-	1.65	2.20	2.52	2.03	2.75	8.7
6. Dhaka	4.94	4.66	5.30	8.68	6.58	10.09	14.79	29.56	38.5
7. Faridpur	2.50	1.55	2.26	2.11	2.11	2.14	2.48	2.88	6.9
8. Jamalpur	-	-	-	-	-	-	-	-	8.7
9. Mymensingh	2.68	2.69	2.62	2.72	3.32	3.51	3.91	5.60	10.0
10. Tangail	-	-	-	-	-	1.79	1.61	5.25	7.5
11. Barisal	1.96	2.01	2.28	2.27	4.08	4.63	3.49	3.92	11.9
12. Jessore	1.16	1.19	1.22	1.25	2.08	2.17	3.42	5.44	10.8
13. Khulna	1.91	2.12	2.21	2.15	3.39	2.84	7.06	14.62	22.4
14. Kushtia	5.69	-	-	6.86	-	4.52	5.40	8.33	14.5
15. Patuakhali	-	-	-	-	-	0.99	1.00	2.47	9.0
16. Bogra	1.29	1.32	1.52	1.74	2.14	2.82	2.98	3.72	7.4
17. Dinajpur	0.83	0.88	1.05	1.08	2.18	5.68	4.21	4.40	8.5
18. Pabna	2.88	3.07	3.23	3.73	4.34	4.36	5.10	7.64	11.6
19. Rajshahi	-	2.09	2.21	2.66	3.88	3.85	4.27	5.79	10.3
20. Rangpur	1.35	1.50	1.99	2.54	3.23	4.39	4.19	4.81	10.9
Bangladesh	2.39	2.20	2.31	3.06	3.38	4.34	5.19	8.78	15.1

Source : Compiled from BBS 1991 (pp.76-77).

as shown in Table 3.12, reveal accelerated urban population growth, both in relative and absolute terms. With the exception of the decennial period ending 1911, when the region recorded a very small population residing in the urban areas (2.20 percent), the area recorded the smallest increase in its urban population (only 0.02 percent, Table 3.13) in the 1901-11 period.

In the eight censuses from 1901 to 1981, the general trend in the level of urbanization and growth in urban population have been upward at the regional levels. Relatively slower growth in the urban population in 1981 indicates two factors. First, the periods covered in the last two censuses (1974-81) are not of equal length. Second, the country experienced economic stagnation and political unrest in the 1970s. The rapid growth in urban population in Bangladesh between 1921 and 1941 reflects not only natural increase, but large-scale migration from the countryside.

As the natural increase rate may not differ significantly in smaller areal units the regional level differentials in urban population growth rates may highlight the role played by migration in causing these differentials. Between 1950s and 1970s these urban regions recorded rapid population growth and as well as of industrial and agricultural processing industries. Population shifts from the countryside to urban areas is the principal component. In absolute terms, considerable urbanization has occurred, particularly as reflected in the growht of big cities, such

as Dhaka, Chittagong, Khulna and in the creation of small and medium sized towns of agricultural - based rural concentration areas. This picture varies from region to region, districts to districts in the country. Table 3.12 shows clearly the differences in the growht rate patterns between 1901-41 and 1951-81 in large and small urban agglomerations. In the earlier period, the small-size urban centres displayed an upward trend that was just the reverse of large cities. The previous Table 3.3 indicates the changes in the size and growth of population in the 14 cities which had a population of one million or above according to the 1981 census. Table also shows several important demographic changes including the stages of emergence of metropolitan cities (e.g. Dhaka, Khulna and Chittagong), the wide variations in the rate of growth of different cities in the same periods and of same city in different census periods.

The regional pattern of the growth of urban population in Bangladesh since 1901 is depicted in Table 3.12. It shows that Dhaka region contains the highest proportion of population living in these major urban centres (4.94 per cent) and Noakhali region is the lowest (0.61 per cent) and it is much below the national average. In 1941, the table shows that the same regions recorded the percentage distribution in urban areas with a little change (6.58 per cent in the Dhaka and 1.08 per cent in the Noakhali regions.) In the next decades after 1941 a sharp increase

in population growth in urban areas was observed. In 1951, there are significant changes in the Chittagong regions urban centres (11.78 per cent) and Dhaka also grew subsequently. The most phenomenal growth took place during 1961-74, increase in urban population being as high as 137.57 per cent (Table - 2.3.). In absolute terms urban population grew exponentially at 6.7 per cent annually during this period, as against 3.75 per cent of the previous decade. In 1974, the share of urban population increased to 8.78 from 5.19 per cent in 1961. This proportion increased to 15.18 per cent in 1981.

3.3.5.2. Regional Variation of Urban Population (Per Annum Compound Growth Rate) 1901-81 :

The growth of urban population in all the regions is further examined in this section in terms of population among the various size categories of urban centres within the region (Table - 3.13. The percentage distribution over the period indicates that the annual compound growth rate was the highest in the Noakhali region (19.57%) during 1974-81 period. In the same period we have seen from the table that the lowest compound growth rate of urban population was in Mymensingh regions (4.51%). It is very interesting that during 1961-74, the annual compound growth rate of population in Dhaka city was (11.55%), but in 1974-81 the figure was only 5.54%. During the same period, the per annum compound growth rate was higher in the Tangail region and Faridpur had the lowest and respective figure were 16.34 and

Table 3.13

Per Annum Compound Growth Rate of Urban Population
(1901-81)

Regions	1901-1911	1911-1921	1921-1931	1931-1941	1941-1951	1951-1961	1961-1974	1974-1981	1951-1981
1.Chittagong	2.82	2.19	3.53	5.39	11.69	2.34	9.27	6.57	6.02
2.CHT	-	-	-	-	-	-	8.50	15.14	-
3.Comilla	1.52	1.17	1.60	5.24	-0.66	1.74	8.92	8.51	5.35
4.Noakhali	N.C.	1.34	8.95	N.C.	-0.87	4.45	7.33	19.57	10.26
5.Sylhet	-	-	-	2.21	3.24	-0.81	6.32	14.22	7.23
6.Dhaka	1.84	0.84	7.53	-1.15	4.06	6.26	11.55	5.54	7.75
7.Faridpur	-3.84	4.45	-0.20	2.01	-0.50	3.14	4.01	10.96	5.98
8.Jamalpur	-	-	-	-	-	-	-	-	-
9.Mymensingh	1.51	0.40	0.98	3.63	-2.21	3.05	6.98	4.51	4.38
10.Tangail	-	-	-	-	-	0.87	16.34	5.43	-
11.Barisal	0.86	2.05	1.11	4.50	1.61	-1.30	3.71	13.74	4.92
12.Jessore	N.C.	N.C.	N.C.	6.11	-0.27	7.32	9.21	9.16	8.56
13.Khulna	1.91	0.99	0.90	6.55	-1.11	11.36	11.63	6.43	9.21
14.Kushtia	-	-	-	-	-	4.65	9.56	7.81	7.23
15.Patuakhali	-	-	-	-	-	1.84	11.92	16.20	-
16.Bogra	1.68	2.10	1.73	3.58	2.92	2.70	5.85	9.36	5.94
17.Dinajpur	1.44	1.84	0.54	8.26	6.25	-0.67	4.61	9.26	4.32
18.Pabna	0.71	0.22	1.84	3.20	-0.70	3.78	7.96	6.38	6.02
19.Rajshahi	-	0.63	1.42	4.85	3.37	3.51	7.49	8.24	6.39
20.Rangpur	2.19	3.34	2.82	3.49	3.25	2.19	5.12	10.48	5.88
Bangladesh	-0.02	1.32	4.63	1.79	3.87	3.79	9.03	7.75	6.83

Notes : The annual compound growth rate was measured by the following formula:

$$r = 100\ [\text{Antilog}\ \left\{\frac{1}{\text{Time Period}} \cdot \log \frac{\text{Current Yr. Population}}{\text{Base Yr. Population}}\right\} - 1\ ]$$

Source : Computed from BBS, 1991 pp.77-79.

4.01 per cent. The corresponding figures of annual compound growth rate of urban population was little different during the period 1901-11 upto 1941-51, and after this periods the rate was higher.

3.4.0. Spatial Patterns and Process of urbanization in Bangladesh:

Earlier we have discussed that urbanization is often identified with urban growth and urban growth usually leads to urbanization. Though both are interrelated process, yet they are different. But it is important to note here that urbanization occurs not evenly distributed over space. Thus the process of urbanization in any given region reveals certain temporal and spatial patterns. Of the various characteristics of urbanization, which indicate its pattern and dimensions, the most important is the degree or level of urbanization which is defined as the percent of the total population of the region inhabiting the urban settlements. The level of urbanization is not an average and is independent of the size of the urban population, the number of urban settlements and their average size.

The present section focusses on two major aspects: levels of urbanization, spatial-structural patterns and process of urbanization in Bangladesh. These two have been discussed using the 'Region' which is the former major district of the country as the basic spatial unit of analysis.

3.4.1 Levels of Urbanization in Bangladesh:

Bangladesh is one of the least urbanized countries of the world. Although a low percentage of the population is urban, the picture is gradually changing in time and space. The level of urbanization of the country as a whole or of any region within it may be measured from data provided by the census. A basic problem, at this stage, relates to the census definition of an urban place. But the percentage of total population in urban areas is a misleading indicator of the level and development of urbanization in country like Bangladesh. According to Scholz[12], in Bangladesh as in many other Third World Countries, the level of urbanization can be designated as 'excessive' urbanization' - the disproportionate growth of urban population outstripping the economic and social development stage of rural areas and causing continuous influx of migrants in the major urban centres. The main features of Bangladesh urbanization is that large numbers of migrants from rural areas and smaller urban areas have moved to the large urban centres, which can be seen by the increased concentration of the urban population in a few centres.

A number of measures have been used for measuring urbanization in the literature. For the present problem we

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12. Cited in Sabiha Sultana (1993), "The Growth of Urban Population and Urbanization in Bangladesh", International Symposium on Population Growth in Developing Countries, New Delhi, 20-24 December

have selected a few attributes for determining the level of urbanization at regional (former greater districts) level in Bangladesh. The following attributes are:

1. the percentage share of urban population in the total urban population of the region (X_1),
2. urban population of the region as percentage share to total urban population of the country (X_2),
3. percentage share of urban centres of the region to total urban centres (above 5,000 population) of the country (X_3),
4. ratios of urban industrial concentration (X_4),
5. location quotient of urban population (X_5),
6. relative distance to the nearest town (X_6).

The validity of these attributes have been calculated by finding out 'Composite Index' by M.G. Kendall's[13] method and method used by R. Ramachandran.[14]

For measuring the level of urbanization we have calculated the 1951-1981 data for X_1 and X_2 attributes and only 1981 data have been used for the composite score for X_1, X_2, X_3, X_4, X_5, X_6 attributes. We have analysed the data for measuring the levels of urbanization for each attribute

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13. Kendall, M.G. (1939) : "The Geographical Distribution of Crop Productivity in England"; Journal of Royal Statistical Society, No.106, 21 (1939).

14. R. Ramachandran, (1989), (Urbanization and Urban Systems in India", Oxford University Press, Delhi, pp. 128-129, 126

and finally we have aggregated all those composite scores for composite index of urbanization.

3.4.1.1. Regional Pattern of the Degree of Urbanization

The degree of urbanization by major urban regions or former greater districts of Bangladesh, is given in Table-3.14. The percentage of urban population in the total population in a region is a criterion which attaches great value to the human and social aspects of urbanization. Our present study selected three attributes (X_1, X_2, X_3) among the six for measuring the composite index of the degree of urbanization.

Table - 3.14 shows that the share of the urban population gradually increased over the years. The overall urban population increased from 4.33 to 15.18 percent during 1951-1981.

In 1951, only six regions namely Chittagong, Dhaka, Dinajpur, Rangpur, Kushtia, Pabna were the above the national average (4.33%) and their respective figures were 12.77, 10.05, 5.58, 4.37, 4.63, 4.35 percent. The rest of the regions were below national average. In 1961, only five regions were above the national average (5.19%) i.e., Chittagong (12.50), CHT (5.97%), Dhaka (14.80%), Khulna (7.02%), Kushtia (5.40%). In 1974 and 1981 period the urban population increased and this has been discussed in detail in the next section of this chapter. In 1974, we have seen

Table: 3.14

Regional Pttern of Levels of Urbanization, 1951-81

Regions	1951(R)	1961(R)	1974(R)	1981(R)
1. Chittagong	12.77 (1)	12.50 (2)	21.88 (2)	31.14 (2)
2. CHT	_	5.97 (4)	10.18 (4)	28.36 (3)
3. Comilla	3.08 (11)	3.17 (12)	4.24 (13)	8.12 (17)
4. Noakhali	0.97 (16)	1.43 (18)	2.14 (20)	10.80 (10)
5. Sylhet	1.99 (15)	2.03 (16)	2.76 (18)	8.75 (14)
6. Dhaka	10.05 (2)	14.80 (1)	31.18 (1)	38.51 (1)
7. Faridpur	2.13 (14)	2.49 (15)	2.86 (17)	6.95 (20)
8. Jamalpur	-	-	5.10 (10)	8.73 (15)
9. Mymensingh	3.14 (10)	3.91 (10)	4.20 (14)	10.03 (12)
10. Tangail	-	1.61 (17)	5.24 (9)	7.57 (18)
11. Barisal	3.62 (8)	2.79 (14)	3.92 (15)	11.96 (6)
12. Jessore	2.17 (13)	3.42 (11)	5.42 (8)	10.82 (9)
13. Khulna	3.32 (9)	7.02 (3)	15.86 (3)	22.41 (4)
14. Kushtia	4.63 (4)	5.40 (5)	8.32 (5)	14.53 (5)
15. Patuakhali	_	1.00 (19)	2.50 (19)	9.00 (13)
16. Bogra	2.81 (12)	2.99 (13)	3.70 (16)	7.44 (19)
17. Dinajpur	5.58 (3)	4.21 (8)	4.42 (12)	8.56 (16)
18. Pabna	4.35 (6)	5.10 (6)	7.61 (6)	11.65 (7)
19. Rajshahi	3.84 (7)	4.27 (7)	5.78 (7)	10.91 (11)
20. Rangpur	4.37 (5)	4.19 (9)	4.81 (11)	10.91 (8)
Bangladesh	4.33	5.19	9.13	15.18
Mean $\bar{X}$	4.30	4.65	7.61	13.83
S.D. σ	2.95	3.47	7.16	8.71
C.V.	68.58%	74.67%	94.14%	62.98%

Source: Sme s Tble - 3.5.

that chittagong, CHT, Dhaka, Khulna had the highest degree of urbanization i.e., 21.88, 10.18, 15.86 percent. In 1981, the percentage of urban population increased further though, only three regions namely Chittagong, CHT, Dhaka had an urban population more than the national average (Table 3.15).

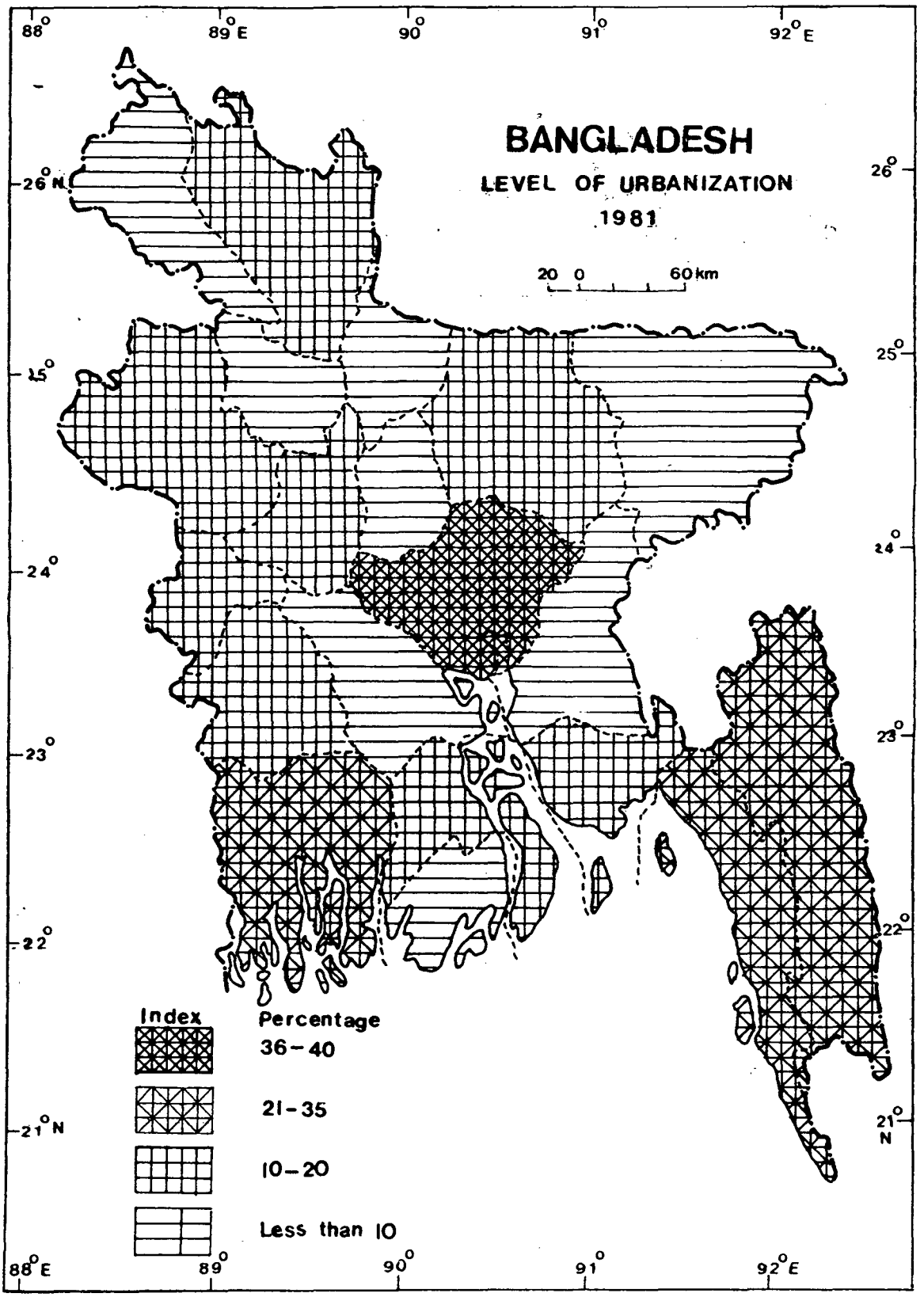
People living in towns and urban centres with a population of 13,000 (13,228) or more accounted for 13.82 percent ($\bar{X}$ = mean) of Bangladesh total population of 87,120,000 in 1981. In relation to developed countries this represents a low level of urbanization.

Table - 3.15

Level of urbanization by Region, 1981
(Urban Population to total Population of the Region)

Category	Rank	Regions	% of Urban Population
Very High (VH) (36 - 40%)	1	Dhaka	38.51
Medium (M) (21 - 35%)	2	Chittagong	31.14
	3	CHT	28.36
	4	Khulna	22.41
Semi-Medium (SM) (10-20%)	5	Kushtia	14.53
	6	Barisal	11.96
	7.	Pabna	11.65
	8	Rangpur	10.91
	9.	Jessore	10.82
	10.	Noakhali	10.82
	11	Rajshahi	10.34
	12	Mymensingh	10.03
Low (L)	13	Patuakhali	9.00
(Less than 10%)	14	Sylhet	8.75
	15	Jamalpur	8.73
	16	Dinajpur	8.56
	17	Comilla	8.12
	18	Tangail	7.57
	19	Bogra	7.44
	20	Faridpur	6.95

Source: Based on Table 3.14



Map - 3.1 Based on Table - 3.15

There are significant variations in the level of urbanization (as measured by the percentage of urban population) between the different regions in Bangladesh. Chittagong (31.14%), Dhaka (38.51%) have more than 30 percent of their population living in towns and they are the most urbanized regions of Bangladesh. Chittagong Hill Tracts (CHT) and Khulna also have a very high level of urbanization with just over 20 percent of their population in towns. The least urbanized region is Faridpur (6.95%), which has a very few number of urban centres with a population of 47,64,000. Urbanization is lowest in North - Western region of Bangladesh (only 9.78 percent) including Rajshahi (10.34%), Pabna (11.65%), Rangpur (10.91%) and Bogra (7.44%) to the total population of the respective regions in Bangladesh (Map 3.1).

The level of urbanization of the country as a whole for the X_2 attributes may be measured from data provided by the census figures. We have also calculated the percentage of urban population of the region as percentage of total urban population of the country (Table - 3.16) by using the same method used in section 3.4.1.1.

$$L = \frac{Ui}{Tu}$$

Where 'L' is the level of urbanization for the country , 'Ui' is the urban population of the ith region and 'TU' is the total urban population of the country.

Table: 3.16

Regional Distribution of Total Urban Population Percentage Share (1951-81)

Regions	Percentage Share			
	1951	1961	1974	1981
1. Chittagong	16.25	14.13	14.58	12.93
2. CHT	-	0.87	0.79	1.61
3. Comilla	6.43	5.27	3.77	4.23
4. Noakhali	1.21	1.29	1.06	3.11
5. Sylhet	3.35	2.69	2.01	3.74
6. Dhaka	22.57	28.56	37.06	29.16
7. Faridpur	3.19	2.99	1.78	2.50
8. Jamalpur	-	-	1.61	1.62
9. Mymensingh	10.00	9.09	4.84	4.98
10. Tangail	-	-	1.66	1.40
11. Barisal	7.25	4.51	2.35	4.22
12. Jessore	2.03	2.84	2.75	3.29
13. Khulna	3.79	6.52	8.74	7.33
14. Kushtia	2.25	2.39	2.39	2.52
15. Patuakhal	-	-	0.57	1.25
16. Bogra	1.98	1.78	1.26	1.53
17. Dinajpur	4.23	2.73	1.73	2.07
18. Pabna	3.79	3.79	3.27	3.02
19. Rajshahi	4.67	4.55	3.77	4.12
20. Rangpur	7.03	6.02	4.00	5.37
Bangladesh	100.0	100.0	100.0	100.0

Source : Computed from Appendix 3.2

Table 3.17

Levels of Urbanization by Size-Classes in Major Urban Regions of Bangladesh, 1981

	Class I Towns	Class II Towns	Class III Towns	Class IV Towns	Class V Towns	All Size Class (TUP*)
	(Percentage of Total Urban Population)					
1. Chittagong	18.59	-	3.23	-	-	13.9
2. CHT	-	-	3.97	6.37	-	0.5
3. Comilla	2.46	11.41	-	-	-	3.5
4. Noakhali	-	8.47	7.20	-	-	1.9
5. Sylhet	2.25	-	2.74	20.88	-	2.4
6. Dhaka	51.22	11.29	9.18	-	-	39.9
7. Faridpur	-	8.59	4.21	6.45	-	1.8
8. Jamalpur	-	9.22	-	-	-	1.3
9. Mymensingh	2.55	7.63	4.08	21.39	-	3.9
10. Tangail	-	5.10	3.50	-	-	1.0
11. Barisal	2.31	-	10.13	-	-	2.6
12. Jessore	1.99	-	11.67	15.10	100.0	3.0
13. Khulna	8.63	3.43	7.06	-	-	7.4
14. Kushtia	-	9.94	-	13.24	-	1.8
15. Patuakhali	-	-	5.25	5.89	-	0.6
16. Bogra	-	4.53	4.05	3.95	-	1.1
17. Dinajpur	-	6.37	3.64	6.72	-	1.4
18. Pabna	2.88	4.75	-	-	-	2.8
19. Rajshahi	3.39	9.27	3.40	-	-	4.1
20. Rangpur	3.74	-	16.71	-	-	4.2
Bangladesh	100.0	100.0	100.0	100.0	100.0	100.0

Source : Compiled from the census Tables, GOB, 1981

* TUP = Total Urban Population

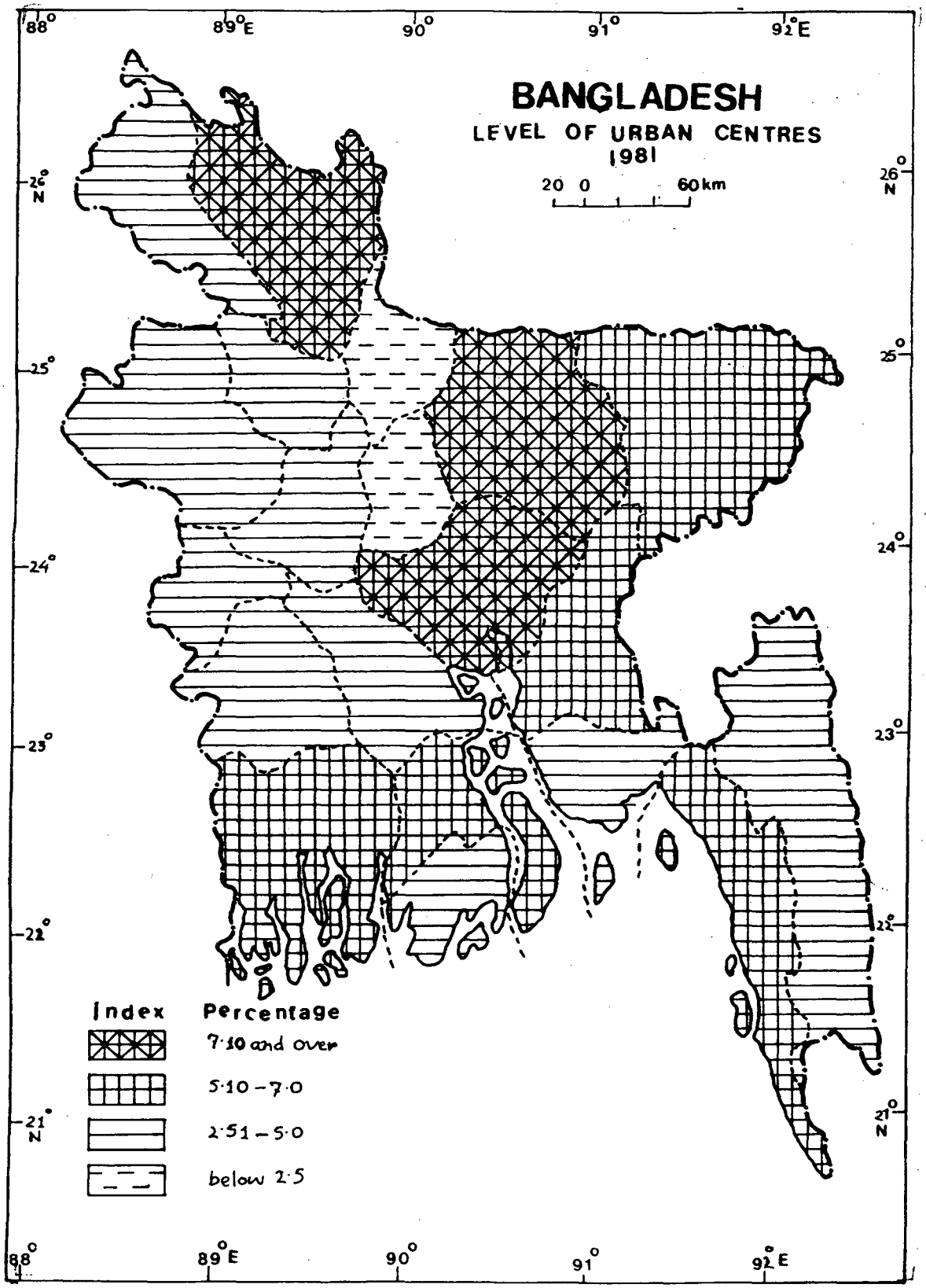
Table - 3.16 shows that in 1981, the highest urban concentration was in Dhaka region (29.16) in respect to the total urban population of the country Then came Chittagong and Khulna regions with 12.93 and 7.33 percent respectively.

If we consider the levels of urbanization by size - classes of major urban regions for the 1981 census period, we find from Table - 3.17 that most of the towns are medium - sized urban centres.

From the distribution of urban size - classes we have seen that Dhaka and Chittagong regions have class I cities (100,000 and above population) and their respective figures was 51.22 and 18.59 percent. Another few major urban centres also included as the class I cities but their percentage figures was very low. Rangpur, Barisal, Jessore are the highest position in their percentage group of class III towns and Mymensingh, Jessore, Kushtia belonged the highest rate in their percentage distribution of class IV towns category.

3.4.1.2. Regional Variations in the Number of Urban Centres:

The number of urban centre is an important indicator of urbanization. It is important to note that an urban centre serves its hinterland population. The urban population is increasing with the increasing rate of natural increase and rural - urban migration. Hence we have chosen urban centres with their percentage share as an indicator (X_3) for



Map- 3·2 : Based on Table - 3·18

measuring the levels of urbanization (for detailes see Table 3.12.). The values of the percentage shares of urban centres were separately arranged in decending order and on the basis of the regional averages four categories, viz, Very High (VH), Medium (M), Low (L) and Very Low (VL) have been made in Table - 3.18

Table - 3.18 shown that only three urban regional centres belonged to the highest level (27.25%) and there were five regional urban centres namely Chittagong, Comilla, Sylhet, Barisal, Khulna which belonged to the medium

Table - 3.18

Level of urban Centres by Region. 1981

Category	Percentage	Cumulative % age (in category)	Name of the Urban Centres Region
VH (Very High)	10.72		Dhaka
[7.10 +]	8.41		Mymensingh
$\bar{X}$ = 9.08, σ = 1.16	8.12	27.25	Rangpur
M (Medium)	6.67		Chittagong
[5.1 - 7.0]	5.51		Comilla, Sylhet
	6.38		Barisal
$\bar{X}$ = 5.79, σ = 0.47	5.80	29.87	Khulna
L (Low)	3.77		CHT, Faridpur,
	4.06		Kushtia,
[2.51 - 50]	4.35		Dinajpur, Pabna
$\bar{X}$ = 3.8, σ = 0.53	3.19		Noakhali,
	4.93	38.28	Jessore
	2.90		Patuakhali
			Rajshahi
			Bogra
VL (Very Low)	2.32		Jamalpur,
[Below 2.5]		4.64	Tangail
$\bar{X}$ = 2.32, σ = 0.0			

Source: Based on Table 3.12

category (29.87%), The most urban centres (38.28%) belonged to the Lowest category and only two major urban centres belonged to the very low category (4.64%). So, from the table we may conclude that most of the urban centres belonged to the low categories (Map 3.2).

3.4.1.3. Urban Industrial Concentration:

Urban industrial concentration is the fourth indication (X_4) for measuring the level of urbanization. According to Mondal[15] the distribution of industrial employment without regard to the distribution of economically active population does not give a clear idea of the levels of concentration of industries in a given urban region. A more meaningful index of urban industrial concentration can be obtained by determining whether a region's share in the industrial employment is larger or smaller than its share in the total economically active population. This has been done by working out the "urban concentration ratios" as represented by Table - 3.19. which compares the levels of urban industrial concentration in each region in 1981.

The concentration ratios have been calculated as the percentage shares of a district in the total (nation-wide) urban industrial employment divided by percentage share of

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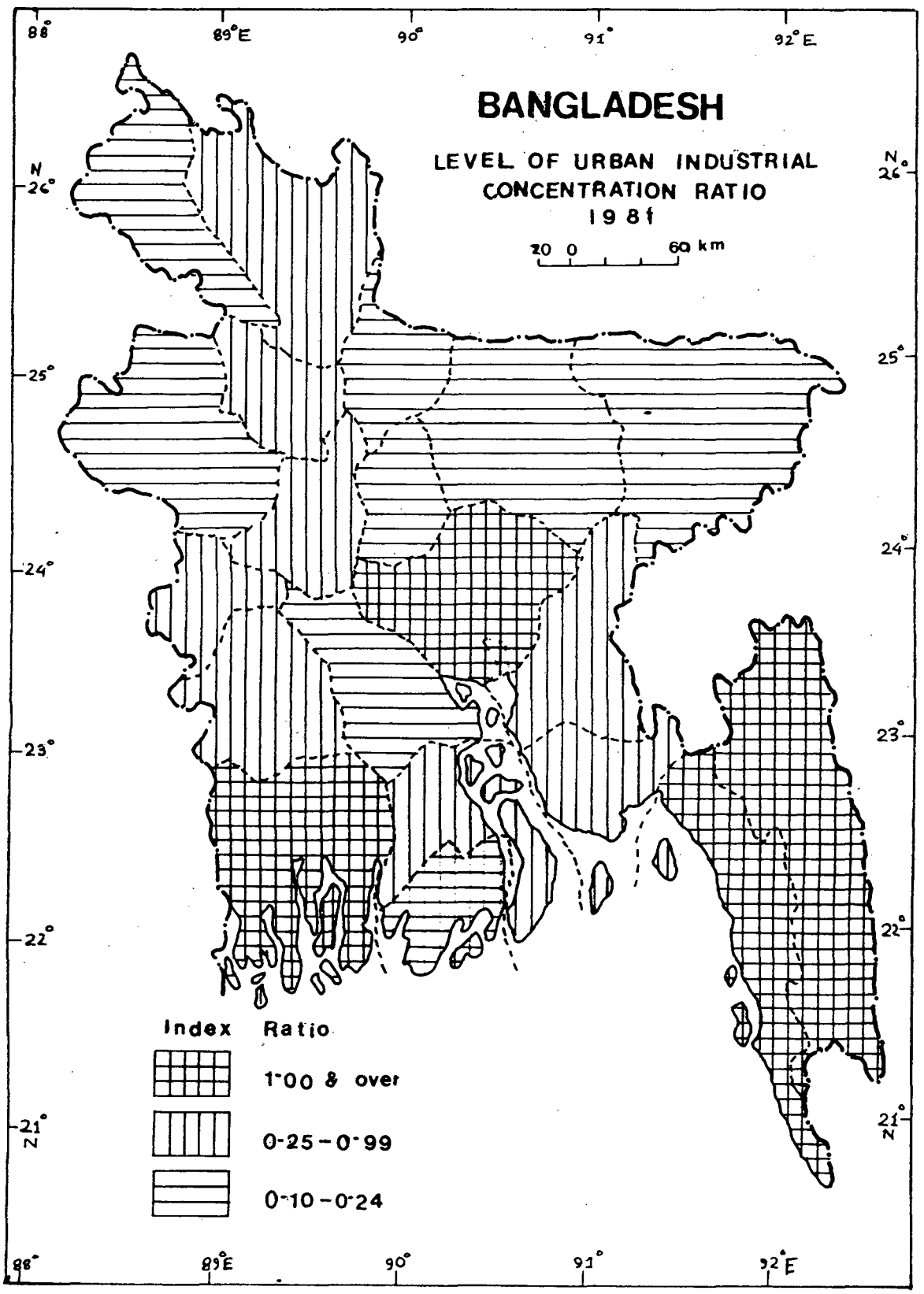
15. See in details A.H. Mondal (1989), "The Pattern of Industrial Location and its Determinants in Bangladesh, Bangladesh Institute of Development Studies (BIDS), Dhaka, Research Report No. 114, p. 9 and p. 11-12, Table-1, 2 and 3

Table 3.19

Index of Urban Industrial Concentration Bangladesh (Regionwise) 1981

Regions	Economically Active Population (%)	Industrial Employment (%)	Concentration Ratios	Rank
1. Chittagong	6.1	18.4	3.02	2
2. CHT	1.2	1.5	1.25	4
3. Comilla	7.2	2.4	0.33	9
4. Noakhali	3.7	1.4	0.38	7
5. Sylhet	6.8	1.3	0.19	17
6. Dhaka	12.5	45.6	3.65	1
7. Faridpur	5.2	0.7	0.13	20
8. Jamalpur	3.0	0.7	0.23	14
9. Mymensingh	8.2	2.0	0.24	13
10. Tangail	2.8	0.4	0.14	19
11. Barisal	5.0	1.6	0.32	10
12. Jessore	4.6	1.7	0.37	8
13. Khulna	4.9	13.7	2.80	3
14. Kushtia	2.7	1.1	0.41	6
15. Patuakhali	1.8	0.4	0.22	15
16. Bogra	3.2	0.8	0.25	12
17. Dinajpur	3.9	0.8	0.21	16
18. Pabna	3.9	2.6	0.67	5
19. Rajshahi	5.5	1.0	0.18	18
20. Rangpur	7.9	2.4	0.30	11
Bangladesh	100.0	100.0	1.00	

Source : Compiled from Mondal (1989).



Map.-3.3 Based on Table -3.20

the region in the total economically active population in the perspective year (Table - 3.19).

On the basis of the level of concentration of industries we can divide the regions into three groups as illustrated in Table - 3.20. The dividing line suggested

Table: 3.20

Urban Industrial Concentration Ratios(Regionwise),1981

Distribution of Urban Regions by Concentration Ratios								
High (1.00 +)			Medium (0.25-0.99)			Low (0.10-0.24)		
Rank	Region	Ratio	Rank	Region	Ratio	Rank	Region	Ratio
1	Dhaka	3.65	5	Pabna	0.67	13	Mymensingh	0.24
2	Chittagong	3.02	6	Kushtia	0.41	14	Jamalpur	0.23
3	Khulna	2.80	7	Noakhali	0.38	15	Patuakhali	0.22
4	CHT	1.25	8	Jessore	0.37	16	Dinajpur	0.21
			9	Comilla	0.33	17	Sylhet	0.19
			10	Barisal	0.32	18	Rajshahi	0.18
			11	Rangpur	0.30	19	Tangail	0.17
			12	Bogra	0.25	20	Faridpur	0.13
	n	4			8			8
	$\bar{x}$	2.68			0.38			0.19
	σ	0.88			0.12			0.04

Source : Based on Table 3.19

here is purely arbitrary but it makes a distinction among

regions with high-level, medium-level and low-level of industrial concentration and provides a useful tool for this analysis (Map. 3.3).

It is evident from Table 3.20 that Dhaka, Chittagong, Khulna and CHT belonged to the highest group, It also indicates that industrialization in Bangladesh has spread in these regions more rapidly. On the other hand there are eight regions belonging to the second group, which we can be called regions with medium-level of industrial concentration areas. The rest eight regions belong to the third group, which we can call the low-level of industrial concentration, industrialization in Bangladesh has tended to concentrate in the eastern parts and therefore urbanization has also taken place in these regions.

3.4.1.4. Location Quotient of Urban Population:

Location Quotient (L.Q.) is another method for measuring the levels of urbanization. The Location quotient of urban population is a quantitative method applied to analyse the levels of urbanization of a district relative to the levels of urbanization of the region[16]. This index indicates the concentration of urban population of each district

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16. The index was first used as a Location Quotient L.Q. by P. Sargent Florence in Political and Economic Planning. Report on Location of Industry, London, 1929, p.287. The index most commonly used to identify the urban economic base, is simple ratio of an industry's share of local employment relative to the industry's share of national employment.

or region as a whole. The Location quotient is denoted by the ratio of the level of urbanization of a region to the level of urbanization of the country

The L.Q. of urban population can be symbolically represented as follows:

$$L.Q. = \frac{Ur/Tr}{Uc/Tc}$$

Where, Ur = Urban Population of the region

Tr = Total Population of the region

Uc = Urban Population of the Country

Tc = Total Population of the Country.

It is important to note that this L.Q. index indicates the concentration of urban population of each region or as a whole. The value of L.Q. for the region is constant at one against which the concentration for the regions is measured. When the value of this index is one it indicates that the region has the same level of urbanization as the country and the values more than one indicate that the level of urbanization of the region is more than the level of urbanization of the country and vice-versa.

According to the L.Q. value (Table-3.21) we have seen that only in two regions (10%) urban concentration is more than other regions of the country namely Dhaka and Chittagong regions. If we group this L.Q. value (Table-

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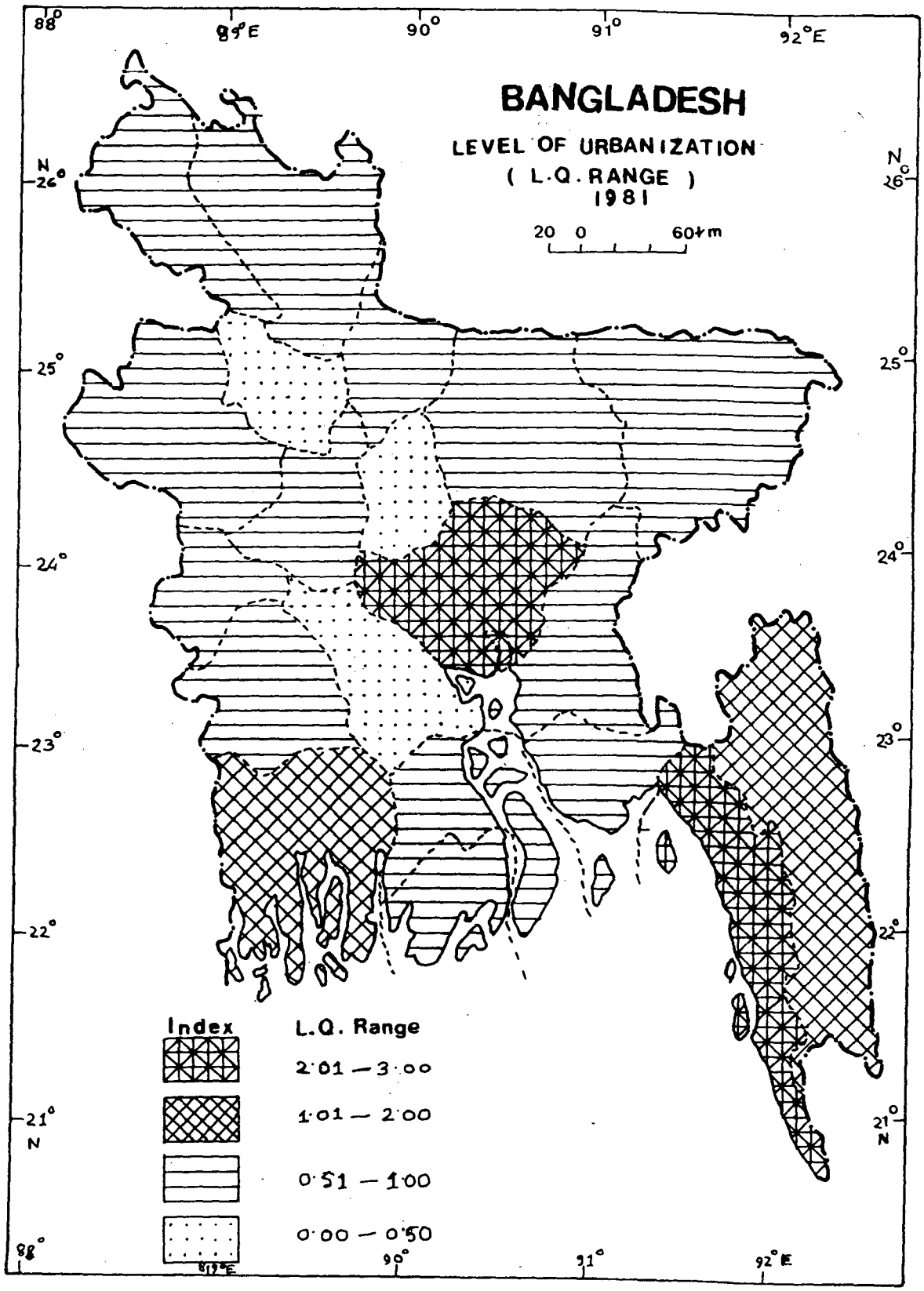

Map-3.4 : Based on Table-3·22

Table: 3.21

Location Quotient of Urban Population, 1981

Regions	Total Population of the Region	Total Urban Population of the Region	L.Q.
1. Chittagong	5491	1710	2.05
2. CHT	752	213	1.87
3. Comilla	6881	559	0.54
4. Noakhali	3816	412	0.71
5. Sylhet	5656	495	0.58
6. Dhaka	10,014	3857	2.54
7. Faridpur	4765	331	0.46
8. Jamalpur	2452	214	0.57
9. Mymensingh	6568	659	0.66
10. Tangail	2444	185	0.50
11. Barisal	4667	558	0.79
12. Jessore	4020	435	0.71
13. Khulna	4329	970	1.48
14. Kushtia	2292	333	0.96
15. Patuakhali	1843	166	0.59
16. Bogra	2728	203	0.49
17. Dinajpur	3200	274	0.56
18. Pabna	3424	399	0.77
19. Rajshahi	5270	545	0.68
20. Rangpur	6510	710	0.72
Bangladesh	87120	13228	1.00

Source : Compiled from the BBS (1985-86)

Table-3.22

Regional L.Q. Values, for Bangladesh 1981

L.Q. Range	Level(%)	Regions
0.00 - 0.50	Very Low (15%)	Faridpur, Tangail, Bogra
0.51 - 1.00	Low (65%)	Comilla, Noakhali, Sylhet, Jamalpur, Mymensingh, Barisal, Jessore, Kushtia, Patuakhali, Dinajpur, Pabna Rajshahi, Rangpur
1.01 - 2.00	Moderate (10%)	CHT, KHULNA
2.01 - 3.00	High (10%)	Chittagong, Dhaka

Source: Based on Table 3.21

3.22) into four we can see that Faridpur, Tangail, Bogra regions (15%) belonged to very low level of urbanization. Most of the regions (65%) belonged to low level of urbanization. Chittagong Hill Tracts and Khulna regions belonged to moderate type of urbanization in their levels. From the L.Q. value with their categories it may be mentioned here that the overall picture of urbanization in Bangladesh belonged to low level of urbanization (Map 3.4).

3.4.1.5 Relative Distance to the Nearest Town :

According to R. Ramachandran[17] (1989), the number of towns could be related to the area of a region on any other territorial space unit. The simplest approach is to measure the density of towns per unit area, which we have discussed and analysed in the previous section 3.3.1. It may be possible to say in this way that the town or the urban area served the rural people and alternatively the rural area was also served by a town. So, both rural and urban area are interrelated and interconnected for their economic functions. It is also important to note that rural people have to travel to the nearest urban centre, which is more convenient to them. Rural people go to their nearest town for a variety of goods and services. Apart from consumer goods and inputs for agriculture, they also depend on the towns for education, medical facilities, government services as well as entertainment facilities. The level of interaction with town is greater when the distance from village to town is not much So, the measurement of the distance to the nearest town is another method for measuring the levels of urbanization. The relative distance to the nearest town may be calculated by the following formula:

$$D = \sqrt{A} / 2.6$$

Where, D = the maximum distance to the nearest town,

A = Area served by the town (hinterland)

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17. R. Ramachandran (1989), Op.Cit. p.126.

Table: 3.23

Distance to the Nearest Town and Spacing of Urban Settlements (Regionwise) 1981

Regions	Total Urban Area (in Km^2)	No. of Urban Centres (Over 5,000) Popu.)	$D=\sqrt{A/2.6}$ Maximum Distance	$Hd=1.0746\sqrt{A/N}$ Spacing or Settlement
1. Chittagong	705.1	23	16.47	5.95
2. CHT	148.6	13	7.56	3.63
3. Comilla	98.3	19	6.15	2.44
4. Noakhali	29.9	14	3.39	1.57
5. Sylhet	154.3	19	7.70	3.06
6. Dhaka	661.9	37	15.96	4.55
7. Faridpur	77.8	13	5.47	2.63
8. Jamalpur	68.7	8	5.14	3.15
9. Mymensingh	140.1	29	7.34	2.36
10. Tangail	54.8	8	4.59	2.81
11. Barisal	59.0	22	4.75	1.76
12. Jessore	167.6	15	8.03	3.59
13. Khulna	151.0	20	7.62	2.95
14. Kushtia	231.0	13	9.43	4.53
15. Patuakhali	38.8	11	3.86	2.02
16. Bogra	44.6	10	4.14	2.27
17. Dinajpur	65.4	13	5.02	2.41
18. Pabna	91.9	13	5.95	2.86
19. Rajshahi	144.1	17	7.44	3.13
20. Rangpur	147.3	28	7.53	2.46
Bangladesh	3280.2	345	35.52	3.31
$\bar{x}$			7.18	3.01
σ			3.40	1.02

Notes : $D=\sqrt{A/2.6}$, D= Maximum distance to the nearest town
A= Area of the hinterland (Town Served Area)
$Hd = 1,0746\sqrt{A/N}$; Hd = Hypothetical distance between two urban centres in a hexagonal shape
A = Area of the Town, N = No. of he Towns in the area.

Source : Compiled from BBS (1981).

In our present analysis we have selected 1981 census data of urban area in Bangladesh Table 3.23 shows that the mean distance between towns of over 5,000 urban population was 7.18 km, and the national average of the maximum distance to the nearest town was 35.52 km. The distance from the nearest town was least is Noakhali region, (3.39 km) followed by Patuakhali, Bogra, Tangail Barisal, region, which had mean distances of between 4-5 Kilometres. These are the least urbanized regions from the point of view of maximum distance to the nearest town (Map 3.5).

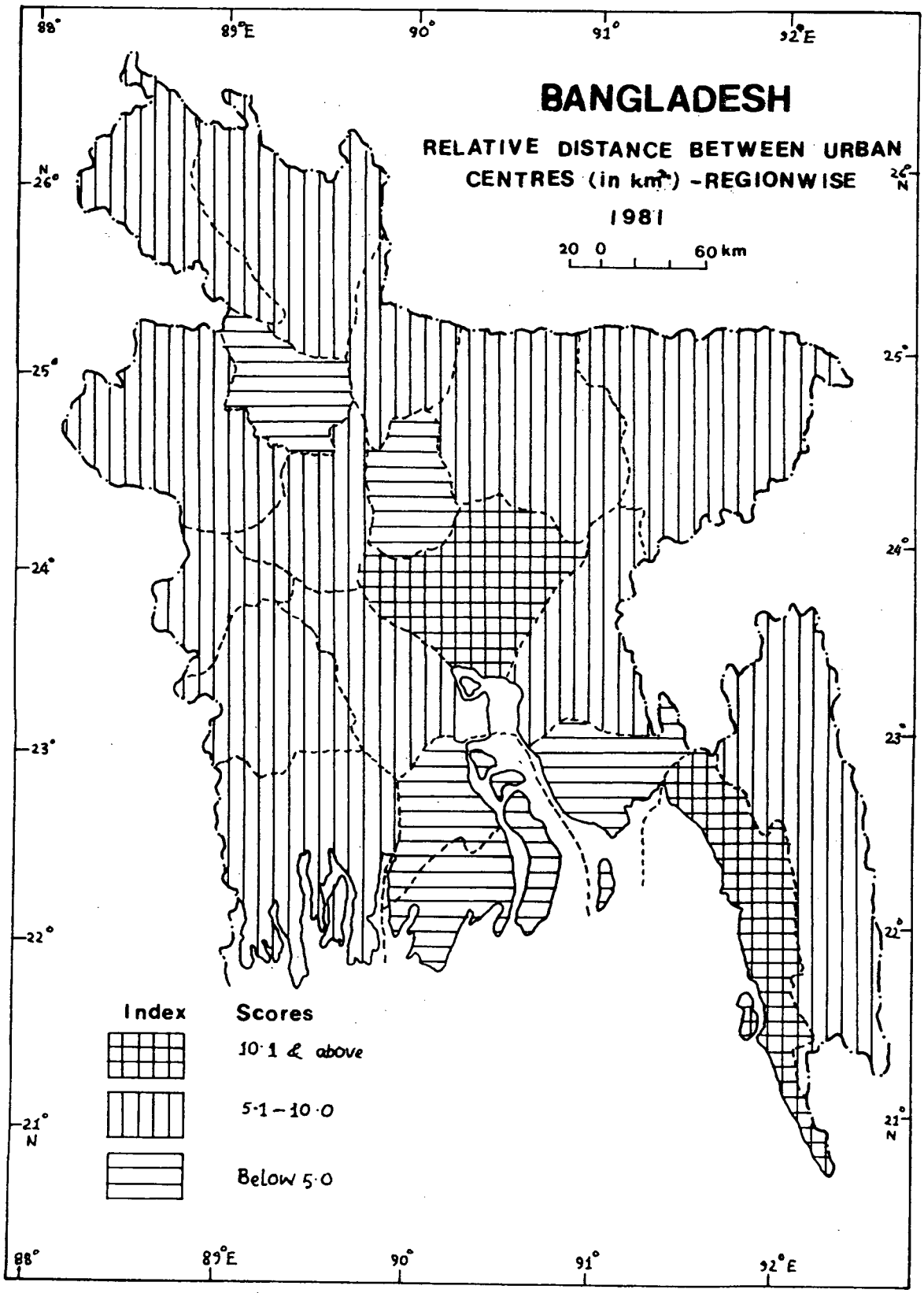
Table - 3.24

Level of Nearest Urban Centres (in Km^2), 1981

'D' values (Km^2)		Category	Regions
Below 5.0	$\bar{X}$ = 4.14 σ = 0.50 n = 5	Low	Noakhali, Tangail, Barisal, Patuakhali, Borgra
5.1 - 10.0	$\bar{X}$ = 6.95 σ = 1.25 n = 13	High	CHT, Comilla, Sylhet, Faridpur Jamalpur, Mymensingh, Jessore Khulna, Kushtia, Dinajpur Pabna, Rajshahi, Rangpur
10.1 +	$\bar{X}$ = 16.22 σ = 0.26 = 2	Very High	Chittagong, Dhaka
	$\bar{X}$ = 7.18, σ = 3.40, n = 20		

Source: Based on Table 3.23

On the other hand there are thirteen major regions where the nearest town was 5.1 to 10 km^2 on the basis of the nearest urban centre analysis (Table - 3.24) and their mean urban centre distance was 6.95 ($\bar{X}$ = 6.95 and σ= 1.25). In



Map - 3.5 : Based on Table - 3.24

Chittagong, Dhaka distance was more than other regions of the country and their mean urban centres distance was 16.22 Km^2 ($\bar{X}$ = 16.22, σ = 0.26).

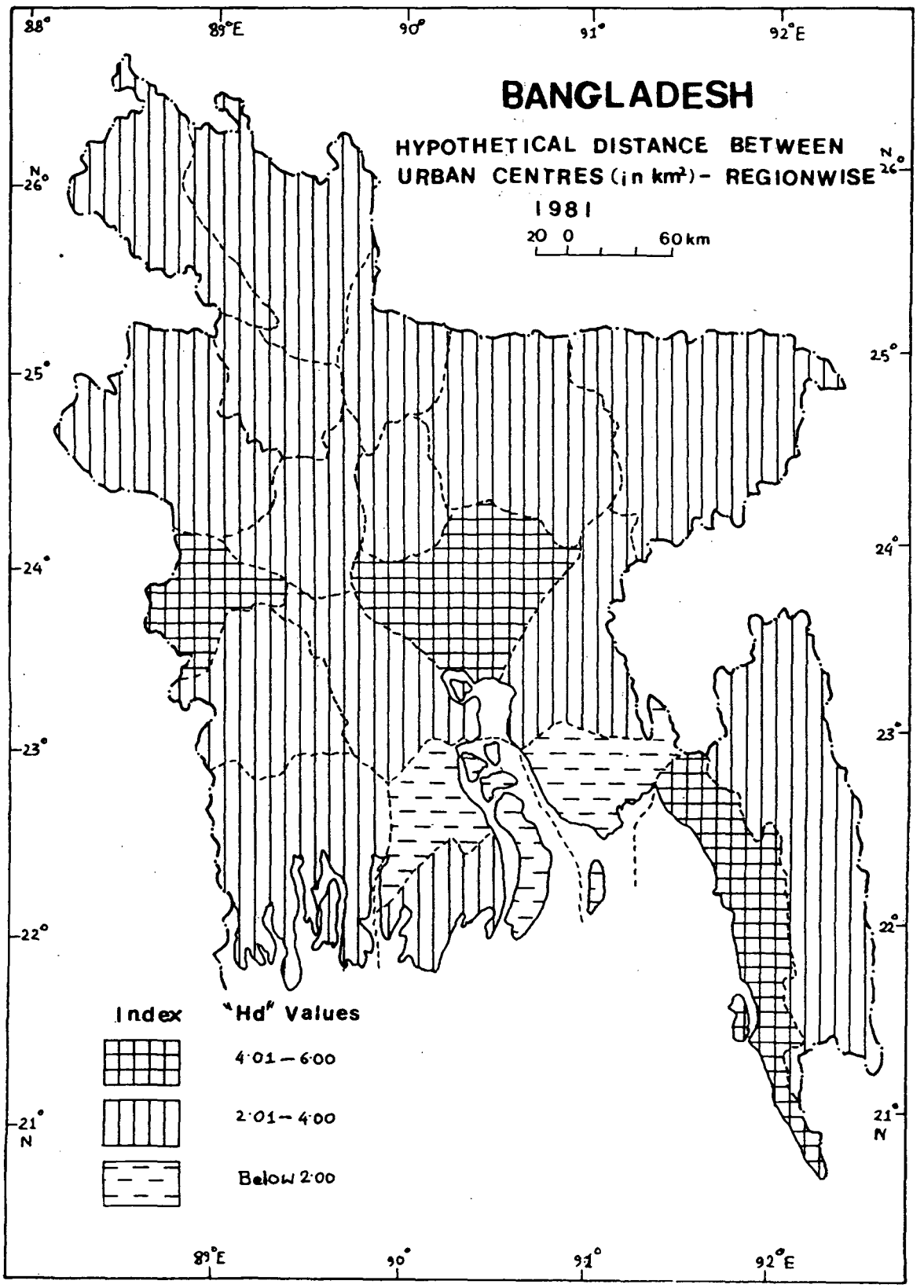
We can analyse the urban centres distance measurement by using the spacing of settlement formula:

$$H_d = 1.0746 \sqrt{A / N}.$$

Where, "H_d is the hypothetical distance between two urban centres in a hexagonal shape, "A" is the area and "N" is the number of urban centres in the area in specific or given time.

The spacing of urban centres indicate the relative locational arrangement in a given time. The relative location of urban centres gives rise to spatial pattern of urban centres. Any spatial pattern is basically the function of distance. So, for our present analysis we can use this method for measuring the spacing of urban centres in regional levels of Bangladesh.

After using the formula for measuring the spacing of urban centres we have calculated the value from total urban area in each region (Table 3.23) and we can categorize these into three groups in (Table - 3.25) Chittagong, Dhaka, Kushtia were in the higher group for spacing of urban centres and their levels ranged from 4.01-6.00 Km^2 ($\bar{X}$ = 2.78, σ = 0.46). Barisal and Noakhali belonged to the lower order group and the range was below 2.00 Km^2. (Map 3.6)



Map-3.6.: Based on Table – 3.25

Table 3.25

Level of Spacing of Urban Centres

Hd Values (Km^2)	Cateogry	Regions
Below 2.00	Low (L) Spacing	Noakhali, Barisal
($\bar{X}$ = 1.67, σ = 0.50, n = 2)		
2.01 - 4.00	Moderate(M) Spacing	CHT, Comilla, Sylhet, Faridpur, Jamalpur,Mymensingh, Tangail, Jessore, Khulna, Patuakhali Bogra, Dinajpur, Pabna, Rajshahi, Rangpur
($\bar{X}$ = 2.78, σ = 0.46,n = 15)		
4.01 - 6.00	High (H) Spacing	Chittagong, Dhaka, Kushtia
($\bar{X}$ = 5.01, σ = 0.66, = 3)		
$\bar{X}$ = 3.01, = 1.02, n = 20		

Source: Based on Table 3.23

3.4.1.6 **Composite Index of Urbanization :**

We have found from the previous section that urbanization measurement is not a simple matter, it is a complex phenomenon. It depends on various components and migration, number of urban centres, urban population ratio, distance to the nearest urban centres etc., because urbanization involves changes in the urban structure, urban economy, modern facilities, transport development social development and it serves the rural-settlements. All these phenomenon bear different characteristics. It may be a direct measure of an economic and social variable, or more often an indirect measure of non-measurable phenomena (such as transport network, social development etc.).

It is important to note that indicators are disaggregated, composite (aggregated) or representative. Before selecting the indicators for measuring the urbanization and its levels it should be homogenous for their components, either they are mutually inclusive (+) or mutually exclusive (-), thus, developing the composite index for measuring the urbanization into the combined procedures. But developing this composite index is not an easy process, a number of problems arise. In the absence of any theoretical or practical consideration to the contrary, we could assume that all selected components are of equal importance and as such equal weightage can be given to them in the composite index. A second problem has to do with the units of measurement.

In our present problem we have selected six indicators, which bear are related to the elements of urbanization, such as percentage of urban population for a specific region and nation as a whole, per cent of urban centres, ratios of urban industrial concentral, L.Q. of urban population, nearest urban centres in terms of distance. These units are not measurable. In order to arrive at an overall picture, the six measures may be combined into a composite index of urbanization and to make them comparable the values of each of the components may be transferred into a standard form by using the statistical formula :

$$Z = \frac{X - \bar{X}}{\sigma}$$

Where, 'Z' is the standardised value, 'X' is the actual value, '$\bar{X}$' is the mean of the components being measured and 'σ' its standard deviation. The standard deviation scores on each of the component have zero as their mean and unit standard deviation. Another problems has to do with the fact that the percentage of urban population both in regional or national levels is inversely related to the other components. To overcome this problem, we may assume that signs may be corrected. So, when the indicators value have to found in positive sign, it indicates a high level of urbanization and the negative values indicate a low level of urbanization. The standard scores on all the six components are then added together to give a composite index of urbanization (Table 3.26).

The values of the six components were separately arranged in descending order and on the basis of the regions averages four categories viz., Very High (VH), Medium (M), and Low (L) have been made. For each group, then, scores were plotted in such a way that the aggregate urbanization scores for the four categories were placed apart from each other. After that the data have been represented by choropleth method. After determining spatial distribution of each of these composite scores, now we can determine the levels of urbanization in the region. Values of each of these composite scores are given weightage and total weightage is calculated in Table- 3.27 and plotted in the map (Map-3.7).

Table: 3.26

Levels of Urbanization in Bangladesh by Composite Index, 1981

Regions	Indicators						Composite Score (Z-score)						Composite Index of Urbani-Zation
	X1	X2	X3	X4	X5	X6	X1	X2	X3	X4	X5	X6	
1. Chittagong	31.14	12.93	6.67	3.02	2.05	16.47	+1.99	+1.29	+0.78	+2.17	+1.98	+2.73	+10.94
2. CHT	28.36	1.93	3.77	1.25	1.87	7.56	+1.67	-0.50	-0.58	+0.47	+1.67	+0.11	+ 2.84
3. Comilla	8.12	4.23	5.51	0.33	0.54	6.15	-0.66	-0.13	+0.24	-0.42	-0.65	-0.30	- 1.92
4. Noakhali	10.80	3.11	4.06	0.38	0.71	3.39	-0.35	-0.31	+0.44	-0.37	-0.35	-1.11	- 2.93
5. Sylhet	8.75	3.74	5.51	0.19	0.58	7.70	-0.58	-0.21	+0.24	-0.55	-0.57	+0.15	- 1.52
6. Dhaka	38.52	29.16	10.72	3.65	2.54	15.96	+2.83	+3.95	+2.69	+2.71	+2.84	+2.58	+17.60
7. Faridpur	6.95	2.50	3.77	0.13	0.46	5.47	-0.79	-0.41	-0.58	-0.61	-0.79	-0.50	- 3.68
8. Jamalpur	8.73	1.62	2.32	0.23	0.57	5.14	-0.59	-0.55	-1.26	-0.51	-0.60	-0.60	- 4.11
9. Mymensingh	10.03	4.98	8.41	0.24	0.66	7.34	-0.44	-0.003	+1.60	-0.51	-0.44	+0.05	+ 0.26
10. Tangail	7.57	1.40	2.32	0.14	0.50	4.59	-0.72	-0.59	-1.26	-0.60	-0.72	-0.76	- 4.65
11. Barisal	11.96	4.22	6.38	0.32	0.79	4.76	-0.21	-0.13	+0.65	-0.43	-0.21	-0.71	- 1.03
12. Jessore	10.82	3.29	4.35	0.37	0.71	8.03	-0.34	-0.28	-0.31	-0.38	-0.35	-0.25	- 1.41
13. Khulna	22.41	7.33	5.80	2.80	1.48	7.62	+0.99	-0.38	-0.38	-1.96	-0.99	+0.13	+ 4.83
14. Kushtia	14.53	2.52	3.77	0.41	0.96	9.43	+0.08	-0.41	-0.58	-0.34	+0.09	+0.13	+ 0.50
15. Patuakhali	9.00	1.25	3.19	0.22	0.59	3.86	-0.55	-0.61	-0.85	-0.52	-0.56	-0.57	- 4.06
16. Bogra	7.44	1.53	2.90	0.25	0.49	4.14	-0.73	-0.57	-0.99	-0.49	-0.74	-0.89	- 4.41
17. Dinajpur	8.56	2.07	3.77	0.21	0.56	5.02	-0.61	-0.48	-0.58	-0.53	-0.61	-0.64	- 3.45
18. Pabna	11.65	3.02	3.77	0.67	0.77	5.95	-0.25	-0.32	-0.58	-0.09	-0.25	-0.36	- 1.85
19. Rajshahi	10.34	4.12	4.93	0.18	0.68	7.44	-0.40	-0.14	-0.03	-0.56	-0.40	-0.08	- 1.45
20. Rangpur	10.91	5.37	8.12	0.30	0.72	7.53	-0.34	+0.06	-1.46	-0.45	-0.33	+0.10	+ 0.50
Bangladesh	15.18	100.0	100.0	1.00	1.00	143.55							00.00
Mean (x)	13.83	5.00	5.00	0.76	0.91	7.18							
Std. Dev.	8.71	6.11	2.13	1.04	0.57	3.40							

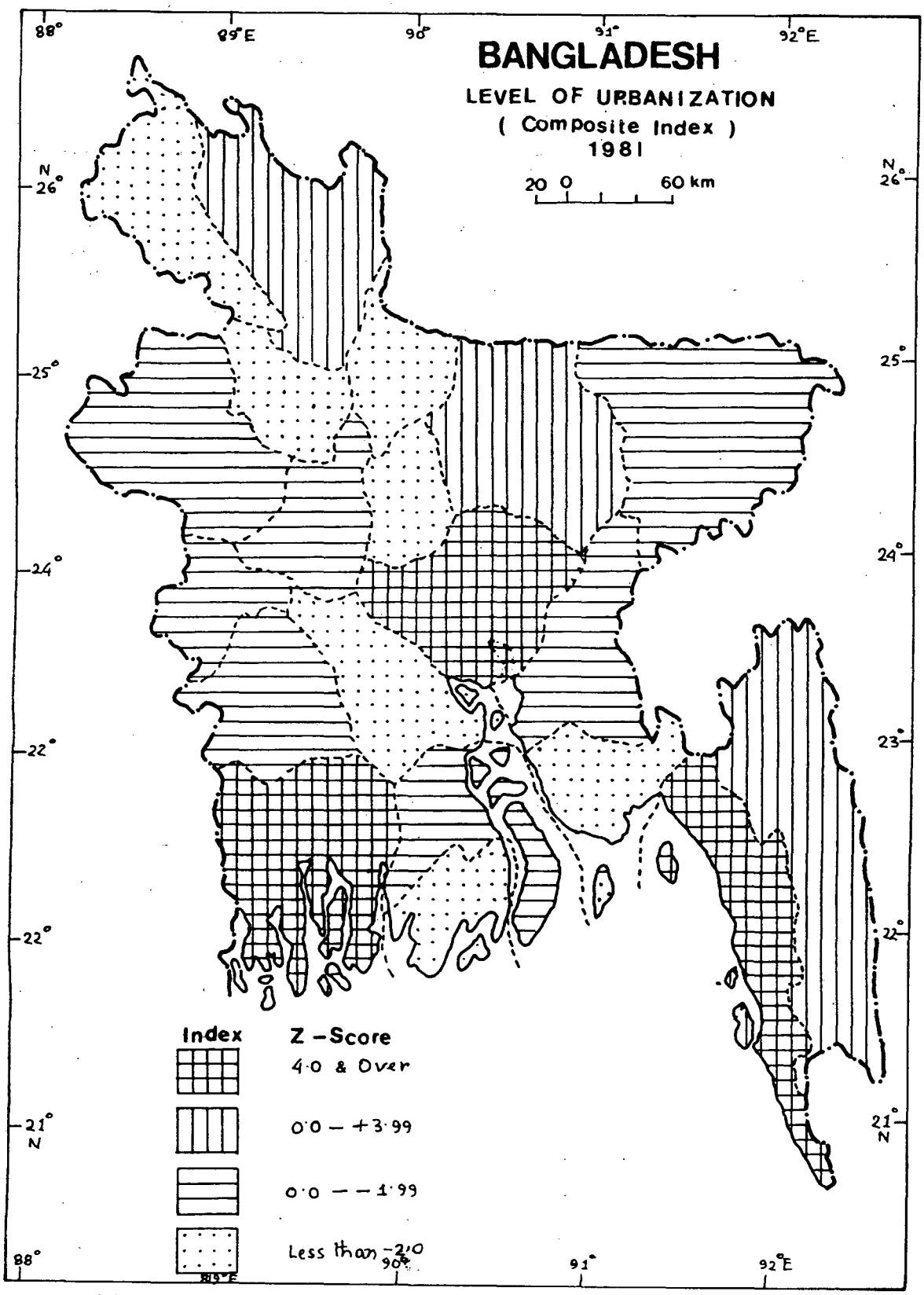
Table: 3.27

Level of Urbanization on the Basis of Composite Index After Weighting, 1981

Category	Rank	Regions	Z-Score	Cumulative Z-Score
Very High (VH)	1	Dhaka	+ 17.60	
(4.0 +)	2	Chittagong	+ 10.94	
	3	Khulna	+ 4.83	+ 33.37
		(n = 3 $\bar{X}$ = 1.12, σ = 1.16)		
High (H)	4	CHT	+ 2.84	
(0.0 - + 3.99)	5	Rangpur	+ 0.50	
	6.	Mymensingh	+ 0.26	+ 3.6
		(n = 3 $\bar{X}$ = 1.12, σ = 1.16)		
Medium (M)	7	Kushtia	- 0.50	
(0.0 - - 1.99)	8	Barisal	- 1.03	
	9	Jessore	- 1.41	
	10	Rajshahi	- 1.45	
	11	Sylhet	- 1.52	
	12	Pabna	- 1.85	
	13	Comilla	- 1.92	- 1.92
		(n = 7 $\bar{X}$ = 1.38, σ = 0.45)		
Low (L)	14	Noakhali	- 2.93	
(Less than - 2.0)	15	Dinajpur	- 3.45	
	16	Faridpur	- 3.48	
	17	Patuakhali	- 4.06	
	18	Jamalpur	- 4.11	
	19	Bogra	- 4.45	
	20	Tangail	- 4.65	-27.29
		(n = 7 $\bar{X}$ = 3.90, σ = 0.55)		

Source: Based on Table 3.26

From given Table-3.27, we have seen that in the rank order distribution of towns in Bangladesh three are very high in rank categories another three are high rank, seven regional towns are of medium rank categories and another



Map-3.7: Based on Table- 3.27.

seven numbers of regions are in low rank categories. All the positive values of composite score for regions indicated the high levels of urbanization among the regions and negative values indicated low level of urbanization.

So, in order to rank the distribution of regions after weighting by composite index Dhaka, Chittagong, Khulna have a high composite index and Dhaka has the highest level of urbanization on the basis of composite score. These three regions have positive values on the composite index, ranging and their mean score was 11.2. The other three regions, namely Chittagong Hill Tracts (CHT), Rangpur, Mymensingh form a lower Positive group with relatively high levels of urbanization. All these regions have positive values on the composite index, ranging from zero to four.

We know that low levels of urbanization are reflected by negative scores. There are seven regions, namely Kushtia, Barisal, Rajshahi, Sylhet, Pabna, Comilla which have negative values on the composite index, ranging from zero to two. This category have been identified as medium levels of urbanization and their mean composite score was 1.38. The regions with negative scores of two or more form backward regions with low levels of urbanization. There are seven major regions which have low levels of urbanization. In this category the mean composite index was -3.90. Noakhali, Dinajpur, Faridpur, Patuakhali, Jamalpur, Bogra, Tangail regions have the least urbanized regions of the

country on the basis of composite index.

3.5.0 Structural Patterns of Urbanization in Bangladesh :

The pattern of urban population in different size-classes are not evenly distributed among the regions of the country and it gives interesting insights into the process of urbanization. The characteristics and development of large and small towns are varied and their development pattern is always uneven. It also depends on their inter-urban and intra-urban system of development. So, every urban system may be characterised by the presence of a few large cities and a huge number of small and medium-sized towns. It may also be noted that large urban centres account for a larger percentage of urban population, on the otherhand, medium size urban centres account for less,

Bangladesh is a rural country and towns are limited in their population and numbers.The Bangladesh urban system has very few large cities as well as small urban centres.

The present section analysis the regional distribution of urban population in different size-classes and the regional pattern of the growth of towns of different sizes. The following section discusses the percentage distribution of urban population by five size-classes of towns during 1951-1981.

The 1981 census identified four largest cities and divisional headquarters, namely, Dhaka, Chittagong, Khulna

and Rajshahi. These have been given the official status of metropolitan city with a municipal corporation.

In Bangladesh, though urbanization is a rapidly growing phenomenon, the number of urban centres has not increased at the same rate. But the total urban population increased much more significantly.

The percentage of urban population in class I towns increased from about 35 per cent to 73 per cent between 1951 to 1981; while that of Class II towns increased from 12 per cent to about 15 per cent; Class III towns has decreased from 27 percent to about 9 per cent. The percentage share of Class IV and V has also decreased from 18 per cent to near about 3 per cent and from about 8 per cent to very small 0.08% per cent respectively (Table - 3.28). The table also shows that Class III, Class IV and Class V towns are declining in their total urban population. So, we have seen that from 1951 to 1981, these three classes (III,IV, V) have switched over to the next higher class. The medium and large urban centres are increasing. Though, 1961 and 1974 census reveals that Class III and Class IV towns have increased but in 1981 their number decreased. The most affected categories are Class IV and V towns where the share of the urban population in case of Class V town has come down from 7.84 per cent to 6.78 per cent from 1951 to 1961 and 1.54 per cent in 1974. In case of Class IV towns from 18.02 per cent to 15.01 per cent from 1951 to 1961 and 12.68 per cent in 1974 (Table-3.28). Thus, there is almost equal distribution

Table: 3.28

Urban Structure in Bangladesh, 1951-1981

	Class I Towns	Class II Towns	Class III Towns	Class IV Towns	Class V Towns	Total
1951						
Number of Towns	2	3	14	20	20	59
Percentage	(3.39)	(5.08)	(23.73)	(33.90)	(33.90)	(100.0)
Population (in Numbers)	625,909	218,669	494,087	325,453	141,608	1805,726
Percentage of Total	(34.66)	(12.11)	(27.36)	(18.02)	(7.84)	(100.0)
1961						
Number of Towns	4	6	15	24	23	72
Percentage	(5.56)	(8.33)	(20.83)	(33.33)	(31.94)	(100.0)
Population (in Numbers)	1175,263	362,629	537,049	398,369	179,880	2653,190
Percentage of Total	(44.30)	(13.67)	(20.24)	(15.01)	(6.78)	(100.0)
1974						
Number of Towns	6	14	23	49	12	104
Percentage	(5.77)	(13.46)	(21.12)	(47.12)	(11.54)	(100.0)
Population (in Numbers)	3592,378	975,639	804,242	794,358	96,204	6262,821
Percentage of Total	(57.36)	(15.58)	(12.84)	(12.68)	(1.54)	(100.0)
1981						
Number of Towns	14	21	26	16	1	78
Percentage	(17.95)	(26.92)	(33.33)	(20.51)	(1.28)	(100.0)
Population (in Numbers)	7488,717	1518,580	916,942	282,458	8,423	10215,120
Percentage of Total	(73.31)	(14.87)	(8.98)	(2.77)	(0.08)	(100.0)

Note : Figures in the parenthesis represents total urban population in percentag share.

Source : GOP, 1951 and 1961 (vol.3 and vol.2) and BBS, 1974 and 1981.

of urban population amongst all classes between 1951 and 1981 with Class I towns leading and Class V towns having the lowest share of urban population of the country.

Considering the growth of number of towns along with the growth of urban population in different classes of towns, Class III and Class IV towns which contain highest number of towns are experiencing a growing trend in the number of towns. The growth could possibly be explained by the rapid movement of Class V towns which is now experiencing a declining trend alongwith this situation is the declining percentage share of total urban population, which had been very low from 1951 to 1981. We have seen from the Table that in 1951 there were only two Class I cities and there after in 1981, the urban centres was growing in numbers (3.39% to 17.95%). On the other hand, the Table also shows that Class V towns decreased from 20 (33.90%) to only 1 (1.28%) between 1951 and 1981.

3.5.1.0 Regional Pattern of the Growth of Towns of Different Size-Classes:

Few urban centres are growing fast and few of them very slowly and some urban centres have declined. Hence one can say that the ratio of urban population to that of the urban population is a more important measure of urbanization than the percentage urban share.

For our present study we have classified urban centres into five size-classes of population. But for the present

section of this study we have classified the towns into three categories :

(i) Class I cities or large towns (with 100,000 or more population)

(ii) Medium-sized urban centres (with 25,001 to 100,000 population/Class II and Class III Towns)

(iii) Small - urban centres (with 5,001 to 25,000 population/Class IV and Class V Towns)

3.5.1.1.Regional Pattern of the Growth of Class I Cities :

The present sub-section analyses the regional distribution of Class I cities. The growth rate of these centres was 3.41 per cent during 1951-1981 which was reasonably high for a city or town, the number and percentage of the centres growing at a higher rate to the total number of centres in each category (in the base year 1981). Of the 20 regions in Bangladesh during 1951-1981, the distribution of urban centres of Class I cities varied from time to time (Table 3.29). Thus, we find that the percentage increase during 1951-81 for the Class I cities was :

1951-61 = 0.64 per cent

1961-74 = 0.02 per cent

1974-81 = 2.17 per cent

1951-81 = 4.29 per cent

Table: 3.29

Percentage Distribution of Total Urban Centres in Class I Cities in the Major Regions of Bangladesh (1951-1981)

Regions	1951	1961	1974	1981
1.Chittagong	50.00	50.0	50.0	50.0
2. CHT	-	-	-	-
3. Comilla	-	-	-	33.33
4. Noakhali	-	-	-	-
5. Sylhet	-	-	-	20.0
6. Dhaka	33.3	33.33	15.38	33.33
7. Faridpur	-	-	-	-
8. Jamalpur	-	-	-	-
9. Mymensingh	-	-	14.29	12.5
10.Tangail	-	-	-	-
11. Barisal	-	-	-	25.0
12. Jessore	-	-	-	14.9
13. Khulna	-	33.33	25.0	25.0
14. Kushtia	-	-	-	-
15. Patuakhali	-	-	-	-
16. Bogra	-	-	-	-
17. Dinajpur	-	-	-	-
18. Pabna	-	-	-	66.67
19. Rajshahi	-	-	20.0	25.0
20. Rangpur	-	-	-	33.33
Bangladesh	3.39	5.56	5.66	17.95

Note : Class I cities with 100,000 and over size-classes of population.

Source : Compiled from Appendix - 3.3, 3.4, 3.5, 3.6.

In 1951, there were only 2 Class I cities. In 1961, there were 3 major urban centres, Khulna region adding to that of 1951 account. In 1974, there were five major urban centres namely Chittagong, Dhaka, Mymensingh, Khulna, Rajshahi urban centres. Their percentage share was 50.0, 15.38, 14.29, 25.0, 20.0 per cent respectively in the total urban centres of the region and in that period the national average was 5.66 per cent. Thus during the census periods 1951-1974 percentage change rate was 0.67 per cent.In 1981 census period, among the 20 regions, nine have no large urban centres with 100,000 population size. The national urban centres accounted for about 18 per cent. It is a much higher rate (4.19%), than that of 1951. The large urban centres were concentrated in Chittagong (50.0%), Comilla (33.33%), Sylhet (20.0%), Dhaka (33.33%), Mymensingh (12.5%), Barisal (25.0%), Jessore (14.29%), Khulna (25.0%), Pabna (66.67%), Rajshahi (25.0%), Rangpur (33.33%) regions.

If we consider the distribution of urban centres in this size-category with respect to national average, we see from Table-3.30 that large-size urban centers were concentrated only two major regions in 1951. In 1961 there was 3 major urban centres. In 1974 this category of urban centres were concentrated in five major urban centres and in 1981 there was 11 such urban centres. In 1981 Dhaka, Pabna, Rangpur regions have highest numbers of urban centres and their respective percentage was 14.29 per cent and other 8 regions had 7.14 per cent urban centres.

Table: 3.30

Percentage Distribution of Urban Centres in Class I Towns in the Major Regions of Bangladesh (1951-1981)

Regions	1951	1961	1974	1981
1.Chittagong	1 (50.0)	1 (25.0)	1 (16.67)	1 (7.14)
2. CHT	-	-	-	-
3. Comilla	-	-	-	1 (7.14)
4. Noakhali	-	-	-	-
5. Sylhet	-	-	-	1 (7.14)
6. Dhaka	1 (50.0)	2 (50.0)	2 (33.33)	2 (14.29)
7. Faridpur	-	-	-	-
8. Jamalpur	-	-	-	-
9. Mymensingh	-	-	1 (16.67)	1.(7.14)
10.Tangail	-	-	-	-
11. Barisal	-	-	-	1 (7.14)
12. Jessore	-	-	-	1 (7.14)
13. Khulna	-	1 (25.0)	1 (16.67)	1 (7.14)
14. Kushtia	-	-	-	-
15. Patuakhali	-	-	-	-
16. Bogra	-	-	-	-
17. Dinajpur	-	-	-	
18. Pabna	-	-	-	2 (14.29)
19. Rajshahi	-	-	- 1(16.69)	1 (7.14)
20. Rangpur	-	-	-	2 (14.29)
Bangladesh	2 (100.0)	4 (100.0)	6 (100.0)	14 (100.0)

Notes : Figures in the parenthesis represents the percentage share of total urban centres.

Source : Compiled from Govt. of Pakistan, 1951 (Vol.3), and 1961 (Vol. 2) Govt. of Bangladesh, 1974 and 1981.

3.5.1.2. Regional Pattern of the Growth of Medium-Sized Towns:

The present sub-section analyses the percentage distribution of medium-sized towns to total urban centres during 1951-1981.The incidence of most fast growing towns goes up as one moves from lower to higher-order size-categories. There is a distinct relationship between size category and the growth pattern of the urban centres.

It was noted above that the acceleration in urban growth during eighties, compared with the fifties, is due to higher growth of population in the existing towns and also the increase in the number of towns in 1981. Many of the medium-sized town have gone to the higher order towns/cities. Thus, the percentage of medium-sized urban centres are more or less in the 'take-off stage' category.

In Table-3.31 we find that medium-sized urban centres were more than the large and small urban centres of the country. Between the 1951 and 1981 census, we found that medium-urban centres are the fast-growing towns of the country. The table reveals that 28.81 per cent urban centres increased upto 60.25 per cent between 1951-1981 with a growth rate of 1.09 per cent. In 1961, the percentage was 29.16 and in 1974, the percentage was 34.91. Thus we find that the percentage increase during 1951-1981 is the follow

Table: 3.31

Percentage Distribution of Total Urban Centres in Medium - Sized Towns in the Major Regions of Bangladesh (1951-1981)

Regions	1951	1961	1974	1981
1.Chittagong	-	-	-	50.0
2. CHT	-	-	-	50.0
3. Comilla	100.0	75.0	50.0	66.67
4. Noakhali	-	-	33.33	100.0
5. Sylhet	25.0	25.0	14.29	20.0
6. Dhaka	33.33	16.67	38.46	66.67
7. Faridpur	33.33	50.0	60.0	75.0
8. Jamalpur	50.0	50.0	100.0	100.0
9. Mymensingh	14.29	28.58	42.86	37.5
10.Tangail	-	-	66.67	100.0
11. Barisal	25.0	25.0	25.0	75.0
12. Jessore	-	20.0	28.58	42.86
13. Khulna	25.0	-	50.0	75.0
14. Kushtia	-	-	20.0	50.0
15. Patuakhali	-	-	50.0	50.0
16. Bogra	-	50.0	25.0	66.67
17. Dinajpur	66.67	66.67	14.29	66.67
18. Pabna	100.0	66.67	33.33	33.33
19. Rajshahi	25.0	50.0	40.0	75.0
20. Rangpur	33.34	33.34	66.67	66.67
Bangladesh	28.81	29.16	34.91	60.25

Notes : Medium-size urban centres included the class II (50,001-100,000 population) and class III (25,001-50,000 populatiion) towns.

Source : Compiled from Appendix - 3.3, 3.4, 3.5 and 3.6.

ing[18] for the medium-sized towns :

1951-1961 = 0.01 per cent

1961-1971 = 0.20 per cent

1974-1981 = 0.73 per cent

1951-1981 = 1.09 per cent

The table shows that out of 20 major regions did not have medium-sized urban centres in 1951, namely, Chittagong, CHT, Noakhali, Tangail, Jessore, Kushtia, Patuakhali and Bogra. In 1961 Bogra and Jessore were added but Khulna was stagnatiny in this size category.

In 1974, the table shows that Noakhali, Tangail, Kushtia Patuakhali goes up from their previous category because of their fast growing population size. We have also seen that most of the towns population was growing except the Comilla and Pabna regions because their hierarchy changed from lower to upper-size category. In 1981, we have seen all twenty regions have medium-size category of urban centres. The fast-growing medium-sized urban centres have been concentrated in the regions of Jamalpur, Noakhali, and very few urban centres concentrated in Sylhet regions.

18.Measured by the urban growth rate (U.G.R.) formula :

$$U.G.R. = \frac{T_{1981} - T_{1951}}{T_{1951}}$$

Where, T = Town as their population size-category.

Table: 3.32

Percentage Distribution of Urban Centres in Medium Size Towns in the Major Regions of Bangladesh (1951-1981)

Regions	1951	1961	1974	1981
1. Chittagong	-	-	-	1 (2.13)
2. CHT	-	-	-	1 (2.13)
3. Comilla	3 (17.65)	3 (14.29)	3 (8.11)	2 (4.26)
4. Noakhali	-	-	1 (2.70)	4 (8.51)
5. Sylhet	1 (5.88)	1 (4.76)	1 (2.70)	1 (2.13)
6. Dhaka	1 (5.88)	1 (4.76)	5 (13.51)	4 (8.51)
7. Faridpur	1 (5.88)	2 (9.52)	3 (8.11)	3 (6.38)
8. Jamalpur	1 (5.88)	1 (4.76)	1 (2.70)	2 (4.26)
9. Mymensingh	1 (5.88)	2 (9.52)	3 (8.11)	3 (6.38)
10.Tangail	- -	-	2 (5.41)	2 (4.26)
11. Barisal	1 (5.88)	1 (4.76)	1 (2.70)	3 (6.38)
12. Jessore	-	1 (4.76)	2 (5.41)	3 (6.38)
13. Khulna	1 (5.88)	-	2 (5.41)	3 (6.38)
14. Kushtia	-	-	2 (5.41)	2 (4.26)
15. Patuakhali	-	-	1 (2.70)	1 (2.13)
16. Bogra	-	1 (4.76)	1 (2.70)	2 (4.26)
17. Dinajpur	2 (11.76)	2 (9.52)	1 (2.70)	2 (4.26)
18. Pabna	2 (11.76)	2 (9.52)	2 (5.41)	1 (2.13)
19. Rajshahi	1 (5.88)	2 (9.52)	2 (5.41)	3 (6.38)
20. Rangpur	2 (11.76)	2 (9.52)	4 (10.81)	4 (8.51)
Bangladesh	17(100.0)	21(100.0)	37 (100.0)	47 (100.0)

Notes : Figures in the parenthesis represents the percentage share of total urban centres.

Source : Computed from Appendix - 3.9 and 3.10.

If we consider the national figure for the percentage distribution of medium-sized urban centres, we have seen from Table - 3.32 that out of 20 major regional urban centres there were 17 urban centres in this category. Chittagong, CHT, Noakhali, Tangail, Jessore, Kushtia, Patuakhali, Bogra regions had no urban centre in the 1951 period. Whereas in 1981 all major regions have such urban centres. In 1981, out of 47 urban centres Noakhali and Rangpur regions belongs to the top group with a percentage share of 8.51 per cent.

In Bangladesh, a small number of urban centres are concentrated in the medium-size category of towns. On the otherhand large urban centres are graduating to their next upper group i.e., in Class I Cities as their population size-category. Most of the towns in the country are in the medium sized category because the shares are large cities (17.95 per cent), medium-sized (60.25 per cent) and small towns (21.29 per cent).

3.5.1.3. **Regional Pattern of the Growth of Small-Towns :**

We have already mentioned that most of the towns of Bangladesh are in the medium-and small size category. The present sub-section discusses the percentage distribution of small urban centres in the country during 1951-1981 period.

From Table 3.33 we have seen that from 1951, this type of urban centres have been few. Thus, we have found that in 1951, only Pabna and Comilla regions had no this type of

Table 3.33

Percentage Distribution of Small-Size Towns in the Major Regions of Bangladesh (1951-1981)

Regions	1951	1961	1974	1981
1.Chittagong	50.0	50.0	50.0	-
2. CHT	100.0	100.0	100.0	50.0
3. Comilla	-	25.0	50.0	-
4. Noakhali	100.0	100.0	66.67	-
5. Sylhet	75.0	75.0	85.71	60.0
6. Dhaka	33.33	50.0	46.15	-
7. Faridpur	66.67	50.0	40.0	25.0
8. Jamalpu	50.0	50.0	-	-
9. Mymensingh	85.71	71.43	42.86	50.0
10.Tangail	100.0	100.0	33.33	-
11. Barisal	75.0	75.0	75.0	-
12. Jessore	100.0	80.0	71.43	42.86
13. Khulna	75.0	66.67	25.0	-
14. Kushtia	100.0	100.0	80.0	50.0
15. Patuakhali	100.0	100.0	50.0	50.0
16. Bogra	100.0	50.0	75.0	33.33
17. Dinajpur	33.33	33.33	85.71	33.33
18. Pabna	-	33.33	66.67	-
19. Rajshahi	75.0	50.0	40.0	-
20. Rangpur	66.67	50.0	40.0	-
Bangladesh	67.80	65.27	59.43	21.79

Notes : Small-size urban centres included the Class IV (with 10,001-25,000 population-size) and Class V (with 5,001-10,000 population-size) towns.

Source : Compiled from Appendix-3.3, 3.4, 3.5 and 3.6.

Table: 3.34

Percentage Distribution of Urban Centres in Small-Size Towns in the Major Regions of Bangladesh (1951 - 1981)

Regions	1951	1961	1974	1981
1.Chittagong	1 (2.5)	1 (2.13)	1 (1.59)	-
2. CHT	1 (2.5)	3 (6.38)	4 (6.35)	1 (5.88)
3. Comilla	-	1 (2.13)	3 (4.76)	-
4. Noakhali	2 (5.0)	2 (4.26)	2 (3.17)	-
5. Sylhet	3 (7.5)	3 (6.38)	6 (9.52)	3 (17.65)
6. Dhaka	1 (2.5)	3 (6.38)	6 (9.52)	-
7. Faridpur	2 (5.0)	2 (4.26)	2 (3.17)	1 (5.88)
8. Jamalpur	1 (2.5)	1 (2.13)	-	-
9. Mymensingh	6 (15.0)	5(10.64)	3 (4.76)	4 (23.53)
10.Tangail	1 (2.5)	1 (2.13)	1 (1.59)	-
11. Barisal	3 (7.5)	3 (6.38)	3 (4.76)	-
12. Jessore	2 (5.0)	4 (8.51)	5 (7.94)	3 (17.64)
13. Khulna	3 (7.5)	2 (4.26)	1 (1.59)	-
14. Kushtia	3 (7.5)	6(12.77)	8(12.70)	2 (11.76)
15. Patuakhali	1 (2.5)	1 (2.13)	1 (1.59)	1 (5.88)
16. Bogra	2 (5.0)	1 (2.13)	3 (4.76)	1 (5.88)
17. Dinajpur	1 (2.5)	1 (2.13)	6 (9.52)	1 (5.88)
18. Pabna	-	1 (2.13)	4 (6.35)	-
19. Rajshahi	3 (7.5)	2 (4.26)	2 (3.17)	-
20. Rangpur	4 (10.0)	4 (8.51)	2 (3.17)	-
Bangladesh	40(100.0)	47(100.0)	63(100.0)	17 (100.0)

Notes : Figures in the parenthesis represents the percentage share of total urban centre.

Source : Compiled from Appendix - 3.9 and 3.10.

urban centres among the 20 regions of the country. In 1961 all most centres have this type of urban centres and in 1974, only Jamalpur region had no urban centre. In 1981, it is very interesting to find that only nine regions have this category of urban centres and rest of the major regions have no urban centres. Small-size urban centres were growing, but rate of increase is not high. The high incidence of fast growing small towns in Sylhet, Mymensingh and Jessore regions was 17.65, 23.53 and 17.64 per cent in 1981 census period and slow-growing small town was in CHT, Faridpur, Patuakhali, Bogra and Dinajpur regions (Table-3.34). The size-class distribution of stagnating towns, however, in this category was in all the major regions except Jamalpur. Thus we have seen from the table that old towns are growing faster than the new towns in this category. However, in the medium and large-size category, it is just the opposite. Small-size urban centres were decreasing in following manner:

1951-1961 = -0.04 per cent

1961-1974 = -0.09 per cent

1974-1981 = -0.63 per cent

1951-1981 = -0.68 per cent

Thus, we see that small-size urban centres are stagnating as the fast-growing towns goes up from this category to higher order urban-size category.

Finally we can say that small-size urban centres were

increasing less than medium and large size urban centres. Population is moving towards large centres as facilities are more in large urban centres than small and medium urban centres.

3.5.2.0: Regional Distribution of Urban Population in Different Size-Classes:

We know that demographers have traditionally classified urban centres by size population. In the present study, five size classes are used for towns (Appendix - 3.3, 3,4,3.5, 3.6). One must recognize, however, that the dividing points between classes are somewhat arbitrary and that the range of population size within classes varies considerably. For the present sub-section, we have selected the size-classes by major three groups on the basis of population size of towns in Bangladesh. Thus, we have used the more common terms, 'Class I Cities' or 'large towns', 'medium-sized town' and 'small town' as same as the population size discussed in the previous sub-section 3.5.1.0.

During the 30-year period (1951 to 1981), the number of towns in all size-classes grew from number 59 to 104, increasing by 76.27 per cent, and between to 1981, the number increased from 59 to 78 (due to definitional problem, discussed before), increasing by 32.30 per cent.

A. Large Cities: 1951 - 1961, increasing at 0.28 per cent
1961 - 1974, increasing at 0.29 "
1974 - 1981, increasing at 0.28 "
1951 - 1981, increasing at 1.12 "

Thus, the large cities were increasing at a high growth rate between to 1951 to 1981 Census periods with a positive increasing rate.

B. Medium-Sized Towns : 1951 - 1961, increasing at-0.14 per cent
1961 - 1974, increasing at-0.16 "
1974 - 1981, increasing at-0.16 "
1951 - 1981, increasing at-0.40 "

Thus, medium-sized towns were growing at a very slow pace.

C. Small Towns : 1951 - 1961, increasing at-0.16 per cent
1961 - 1974, increasing at-0.35 "
1974 - 1981, increasing at-0.80 "
1951 - 1981, increasing at-0.89 "

Thus, the Small towns also had very slow growth rate.

For the Large-cities, Medium towns and Small towns, we have seen from the above account that large cities growth of urban population is very high and they are carrying a large proportion. Medium-sized and small urban centres have on the other hand a lower population.

3.5.2.1. Regional Distribution of Urban Population in Class I Cities:

The present sub-section examines the percentage distribution of population of large cities among the major regions in Bangladesh from 1951 to 1981. The urban

Table 3.35

Percentage Distribution of Total Urban Population in Class-I Cities in the Major Regions of Bangladesh (1951 - 1981)

Regions	1951	1961	1974	1981
1.Chittagong	98.01	97.94	98.26	97.92
2. CHT	-	-	-	-
3. Comilla	-	-	-	51.53
4. Noakhali	-	-	-	-
5. Sylhet	-	-	-	66.68
6. Dhaka	81.66	86.96	86.66	93.98
7. Faridpur	-	-	-	-
8. Jamalpur	-	-	-	-
9. Mymensingh	-	-	56.20	47.18
10.Tangail	-	-	-	-
11. Barisal	-	-	-	65.05
12. Jessore	-	-	-	48.51
13. Khulna	-	77.78	84.05	84.68
14. Kushtia	-	-	-	-
15. Patuakhali	-	-	-	-
16. Bogra	-	-	-	-
17. Dinajpur	-	-	-	-
18. Pabna	-	-	-	74.95
19. Rajshahi	-	-	53.88	59.61
20. Rangpur	-	-	-	64.62
Bangladesh	34.66	44.30	57.36	73.31

Note : Same as Table - 5.36

Source : Same as Table - 5.37

population growth in large-urban centres differs from region to region and their distribution pattern also varied in time and space.

Table - 3.35 shows, there are only two major regions which have above 100,000 population, namely Chittagong and Dhaka region according to 1951 Census and their respective percentage share of total population was 98.01 per cent and 81.66 per cent. Large urban centres gradually increased and in 1961, we have seen that a steady growth of towns having 100,000 and over population. In the early part of the present century, towns with 25,001 to 100,000 population were generally growing to the next upper group. Thus new large cities are adding with time. In 1961, there were 3 three major urban regions in the country, namely Chittagong, Dhaka and Khulna. Khulna region is the new urban centre this category. In 1974, there were five urban agglomerations, namely, Chittagong, Dhaka, Mymensingh, Khulna, Rajshahi and their respective percentage share were 98.26, 86.66, 56.20, 84.05, and 53.88 per cent. In 1981, new urban centres were added and eleven such cities emerged.

Chittagong, and Dhaka were the largest Mymensingh and Jessore regions have least urban population in large-size category and their respective figure was 47.18 and 48.51 per cent to the total population of the region. It is lower than the national figure of 73.31 per cent.

In the case of percentage variation we have seen from

the table that Chittagong, Mymensingh go down as their percentage falls slightly during 1951 to 1981 and 1974 to 1981 periods respectively.

3.5.2.2. Regional Distribution of Urban Population in Medium-sized Towns:

The Medium-size urban centres are the dominant element in the system of urban settlements of Bangladesh. The medium-sized towns form an important link function within the urban system of the country. They can serve to offset the deficiencies in the number of larger cities as well as the small towns.

In the first two decades of the present century, there were no medium-urban centres, having population between 25,001 - 1,00,000 in the country. Since 1921, a sharp rise of medium size towns has been observed (Table -3.3 Section-3.1.0). In 1981, number of such towns had significantly increased from only 5 in 1921 to 69 (or 14 per cent of all urban centres) in the country. On the other hand, for the first time in 1941, there were two urban centres having 50,001 to 100,000 population (Class II towns). By 1981, a considerable shift has taken place in this class . Thus, we have seen that medium-sized urban centres were more than the large and small towns.

In terms of percentage distribution among the regions during 1951 to 1981, we have seen that Comilla and Pabna regions have the highest (100.0%) population in this size

Table: 3.36

Percentage Distribution of Total Urban Population in Medium-Sized Towns in the Major Regions of Bangladesh (1951 - 1981)

Regions	1951	1961	1974	1981
1.Chittagong	-	-	-	2.08
2. CHT	-	-	-	66.91
3. Comilla	100.0	96.41	81.27	48.47
4. Noakhali	-	-	46.83	100.0
5. Sylhet	56.51	57.01	45.14	9.96
6. Dhaka	16.62	8.58	8.67	6.26
7. Faridpur	43.88	68.30	66.84	90.21
8. Jamalpur	58.26	60.38	100.0	100.0
9. Mymensingh	38.99	55.26	32.63	37.89
10.Tangail	-	-	83.54	100.0
11. Barisal	74.43	66.73	63.56	34.95
12. Jessore	-	55.24	60.99	34.85
13. Khulna	60.51	-	13.15	15.31
14. Kushtia	-	-	47.96	80.14
15. Patuakhali	-	-	72.62	74.29
16. Bogra	-	80.29	57.05	90.46
17. Dinajpur	87.13	90.22	54.56	87.27
18. Pabna	100.0	88.38	63.73	25.05
19. Rajshahi	46.90	72.05	32.62	40.39
20. Rangpur	71.7	63.50	84.00	35.38
Bangladesh	39.47	33.91	28.42	23.85

Note : Same as Table - 3.31

Source : Same as Table - 3.30

category (Table - 3.36). In this period, there have been no medium-size urban centres in Chittagong, CHT, Noakhali, Tangail, Jessore, Kushtia, Patuakhali, Bogra regions. The national total urban population of this category was 39.47 per cent. In 1961 Comilla region had the largest number of medium size urban centres among the other regions of the country and the percentage share was 96.41 per cent. On the other hand, Dhaka region had the lowest percentage share of population in this category and the figure was only 8.58 per cent. In this period, 7 urban regions had no urban centres in the medium-size category. In 1974, Jamalpur had the highest (100.0%) among the other regions of the country. Khulna region had the least percentage 13.15 per cent. In this period, two regions have no urban in this category, centres, namely Chittagong and Chittagong Hill Tracts (CHT). We see from the table that in 1981, all major twenty regions have the medium-sized towns and their share of urban population was 23.85 per cent. Noakhali, Jamalpur, Tangail have the highest percentage of total urban population of the region (100.0 per cent) and Chittagong regions have the least percentage in this category.

From our observation that the medium-sized towns were growing with time and that medium-size category is the intermediate stage for urban growth, it can be said that they are catching and switching over the population from the small urban centres to large cities.

3.5.2.3. Regional distribution of urban population in Small Towns:

The smaller regions and small urban centres as well as the less urbanised regions among the larger regions, have a larger population in small towns. But each urban centre carries a very small percent of urban population. We have seen from Table 3.37 that total national urban population of small size category were increasing with a low rate as follows:

1951 - 1961, increasing at-0.16 per cent
1961 - 1974, increasing at-0.35 "
1974 - 1981, increasing at-0.80 "
1951 - 1981, increasing at-0.88 "

From the Table - 3.37 we have seen that among the twenty regions, two regions have no urban centres in the small size category, namely Comilla and Pabna regions in 1951. CHT, Noakhali, Tangail, Jessore, Kushtia, Patuakhali, Bogra have 100.0 per cent of their total population in small towns. Dhaka and Chittagong regions had the least number of small towns. Of their total population only 1.72 and 1.99 per cent lived in them . In 1961, all major twenty regions had small towns. CHT, Noakhali, Tangail, Kushtia, Patuakhali have the 100.0 per cent of their urban population in this category. Chittagong, Comilla has the least small size urban centres of the country and their respective figure was 2.26 and 3.59 per cent. In 1974, Jamalpur regions have no small size urban population among the twenty regions of the

Table: 3.37

Percentage Distribution of Total Urban Population in Small Size Towns in the Major Regions of Bangladesh (1951 - 1981)

Regions	1951	1961	1974	1981
1.Chittagong	1.99	2.26	1.74	-
2. CHT	100.0	100.0	100.0	39.09
3. Comilla	-	3.59	18.73	-
4. Noakhali	100.0	100.0	53.17	-
5. Sylhet	43.49	42.99	54.86	23.35
6. Dhaka	1.72	4.46	4.67	-
7. Faridpur	56.12	31.69	33.16	3.73
8. Jamalpur	41.74	39.62	-	-
9. Mymensingh	61.01	44.74	11.17	14.93
10.Tangail	100.0	100.0	16.46	-
11. Barisal	25.56	33.27	36.44	-
12. Jessore	100.0	44.76	39.00	16.63
13. Khulna	39.48	22.22	2.80	-
14. Kushtia	100.0	100.0	52.05	19.86
15. Patuakhali	100.0	100.0	27.38	25.71
16. Bogra	100.0	19.71	42.95	9.54
17. Dinajpur	12.90	9.78	45.44	12.73
18. Pabna	-	11.62	36.27	-
19. Rajshahi	53.10	27.95	13.50	-
20. Rangpur	28.30	36.50	16.00	-
Bangladesh	25.86	21.79	14.22	2.85

Note : Same as Table - 3.33

Source : Same as Table - 3.30.

country, Chittagong has a very low percentage and CHT region had 100.0 per cent. In 1981, an interesting feature was that eleven major regions had no urban centres and all the figures are lower than the previous Census.

Thus considering these table we can conclude that small type urban centres are concentrated in the small regions of the country and the larger urban centres have very small percentage in this category.

3.5.3.0.Level of Urbanization by Different Size Classes of Urban Population (1981):

The level of urbanization or the proportion of urban population to total population of a territorial space is the most popular index used in urban demographic research. In the present analyses the level of urbanization has been calculated by different size classes of urban population for the 1981 census.

Table - 3.38 shows that the urban centres have been divided in three size categories (viz., Class I cities, medium-sized towns, small towns). These size categories are again divided in three categories with respect to their percentage distribution.

Step-I: It may be observed from the Table - 3.38 that the percentage of urban population in Class I cities to total urban population is concentrated in the regions of

Table 3.38

Level of Urbanization by Different Size Classes of Urban Population 1981

Step-I : Percentage of Population in Class I Cities to Total Urban Population

Categories	%age of Level	Name of the Cities
High (H)	above 70%	Chittagong(97.92%),Dhaka(93.98%) Khulna (84.68%),Pabna(74.95%)
Medium (M)	50 - 70%	Sylhet (66.68%), Barisal(65.05%) Rangpun (64.62%), Rajsahi(59.61%) Comilla (51.53%).
Low (L)	Below 50%	Jessore (48.51%), Mymensingh(47.18%)

Step-II Percentage of Population in Medium-Sized Towns to Total Urban Population

Categories	%age of Level	Name of the Cities
High	above 50%	Noakhali(100.0%), Tangail(100.0%) Jamalpuri(100.0%), Bogra(90.46%) Faridpur(90.21%), Dinajpur(87.27%) Kushtia (80.14%), CHT (66.91%) Patukhali (74.29%)
Medium	20 - 50%	Comilla (48.47%), Rajshani(40.39%) Mymenshigh (37.89%), Rangpur (35.38%), Bansial(34.95%) Jessore (34.85%), Pabna (25.05%)
Low	Less than 20%	Khulna (25.31%), Sylhet (9.96%) Dhaka (6.26%), Chittagong(2.08%)

Categories	%age of Level	Name of the Cities

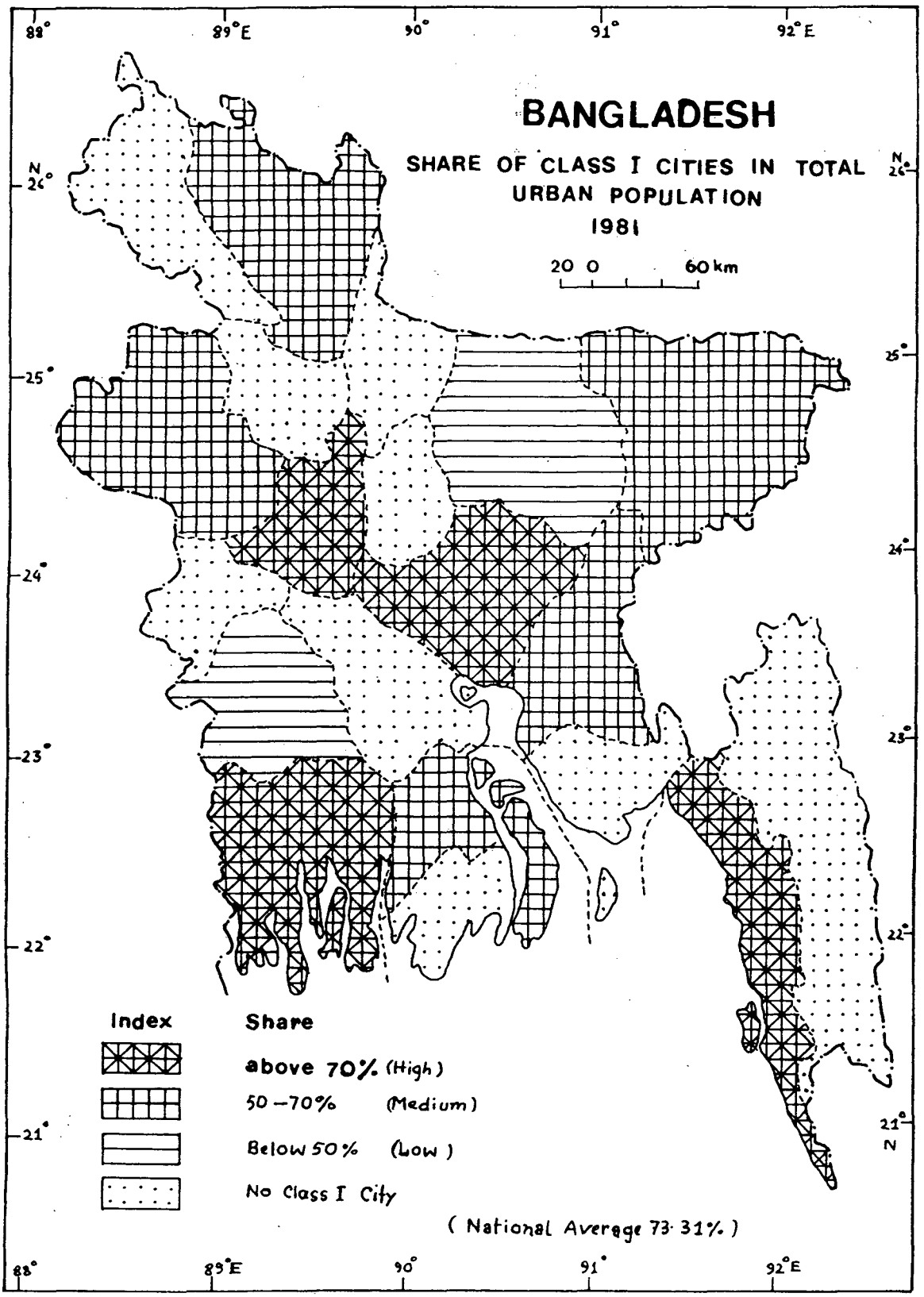
Step-III Percentage of Population in Small-Towns to Total Urban Population

Categories	%age of Level	Name of the Cities
High	above 20%	CHT (33.09%), Patuakhali (25.71%), Sylhet (23.35%)
Medium	10 -20%	Kushtia (19.86%), Jessore (16.63%), Mymensingh (14.93%), Dinajpur (12.73%).
Low	Less than 10%	Bogra (9.35%), Faridpur (3.73%).

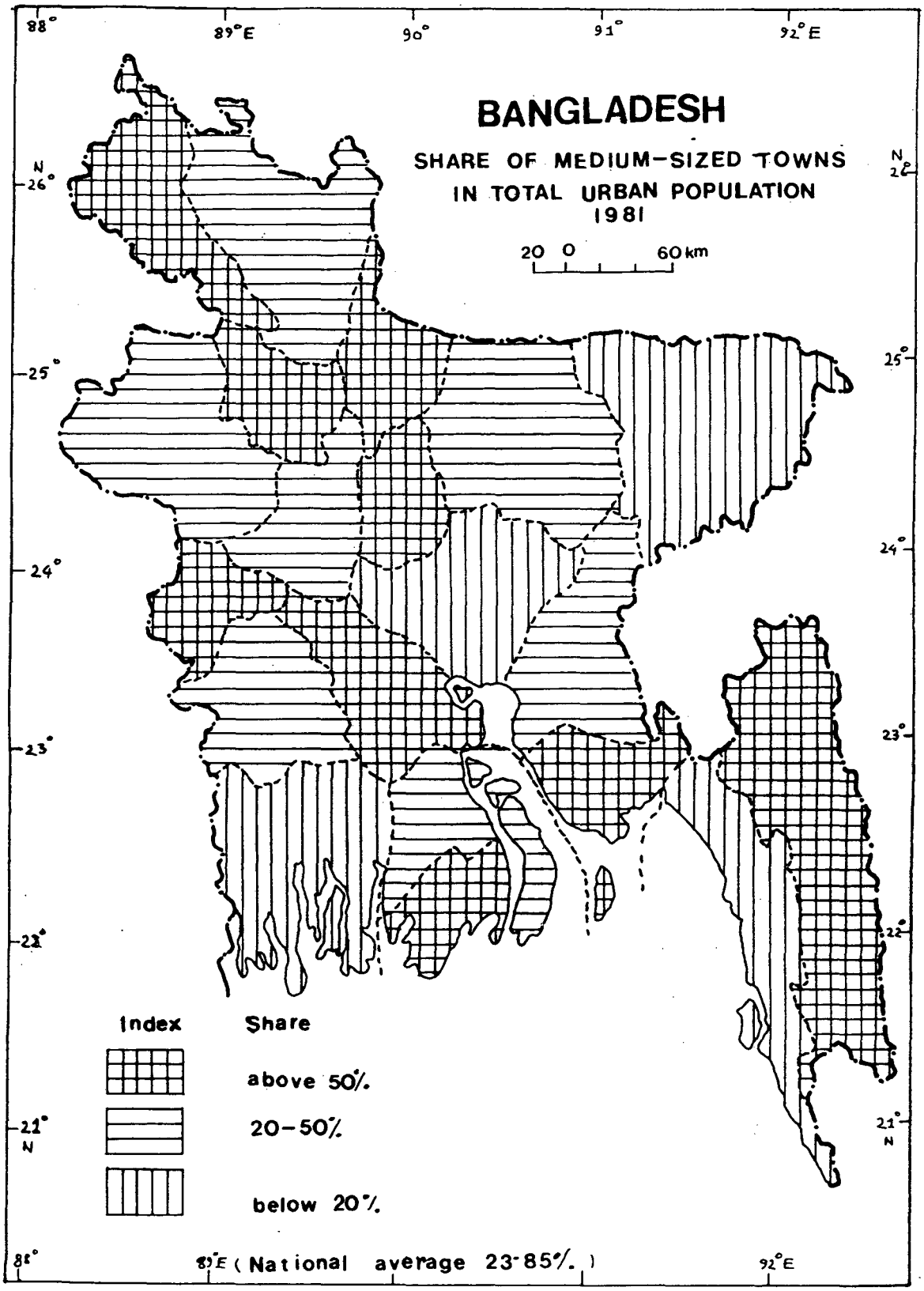
Chittagong, Dhaka, Khulna and Pabna and less concentrated in the Jessore and Mymensingh regions. It reveals that the industrial cities are growing rapidly. The secondary service and agro-based regions are experiencing a population increase (Map - 3.8).

Step II: In this step, we may also observe from the table that there are 9 regions which belong to the higher group, 7 regions belong to the medium-level group and 4 regions belong to the small town group. Here, we are observing that large urban regions (such as Khulna, Dhaka, Chittagong) belong to the lower group of this category. It reveals that in developed regions medium-sized towns were very few. On the other hand less developed or the backward regions have the higher percentage of population in this size category (Map - 3.9)

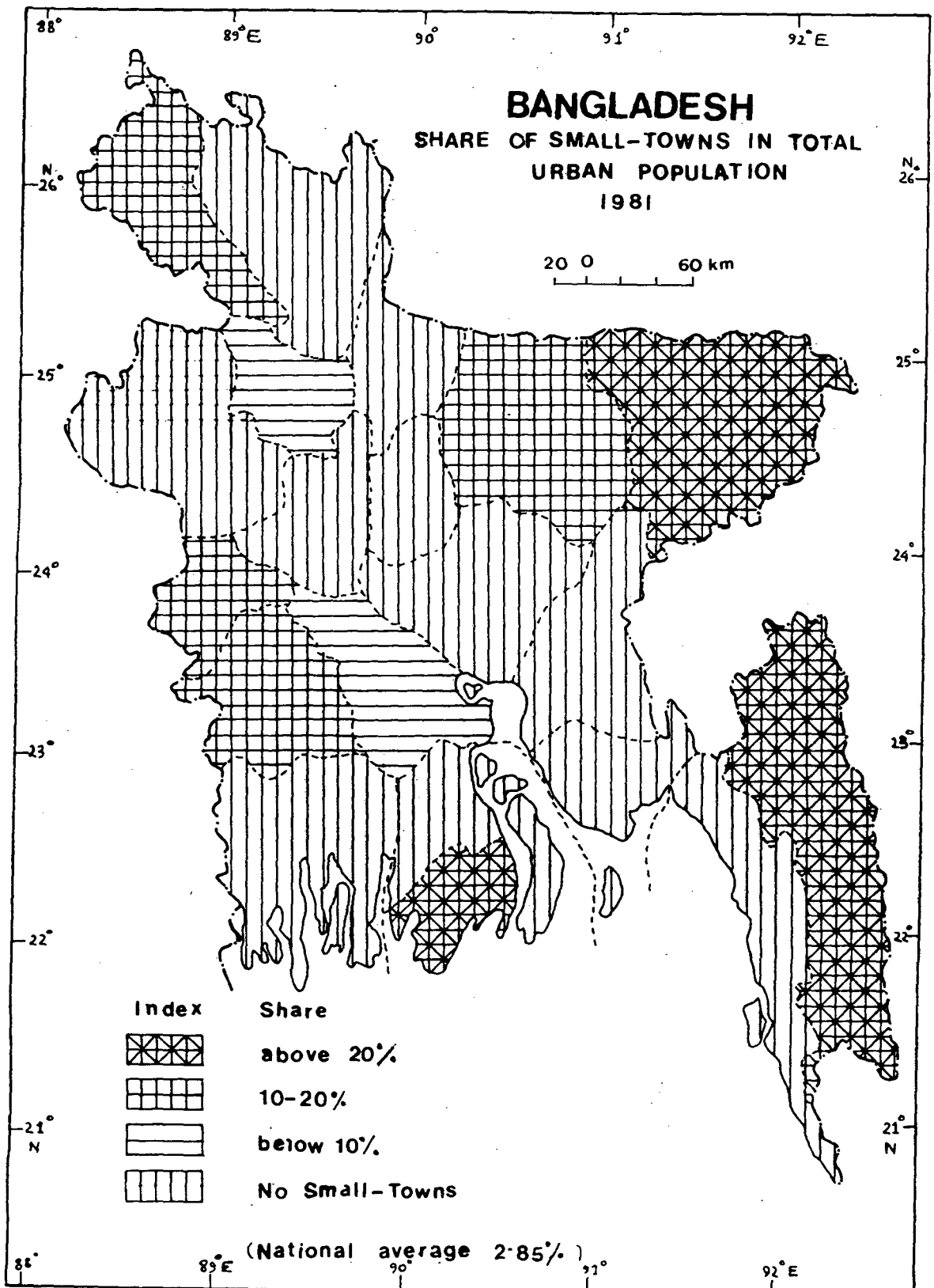
Step III: In the case of small towns of the underdeveloped regions, however, the percentage of slow growing towns in the bottom two size categories has a relatively low population share. It is also important to note that underdeveloped regions have this category of urban population. Thus, we see from the table that there are three regions namely CHT, Patuakhali, Sylhet which belong to the higher level (above 20%); Kushtia, Jessore, Mymensingh and Dinajpur belong to the medium and Bogra, Faridpur belong to the lower categories. (Map 3.10).



Map-3.8 : Based on Table – 3.38 (Step-I)



Map - 3·9 : Based on Table - 3·38 (Step - II)



Map – 3.10 : Based on Table – 3.38 (Step – III)

Table - 3.39 shows the ranking hierarchy of different size-classes of towns in Bangladesh for 1981. We have seen from the table that the total number of class I cities is eleven, the medium-sized towns are 20 and only 9 are small towns in Bangladesh. In case of Class I cities, Chittagong has the highest position and Mymensingh regions has the lowest position. In case of medium sized towns, there were

Table: 3.39

Ranking Hierarchy of Different Size-Classes of Urban Population in Bangladesh, 1981.

Regions	RANK OF TOWNS		
	Class I Cities	Medium Sized Towns	Small Towns
1. Chittagong	1	18	-
2. CHT	-	7	1
3. Comilla	9	8	-
4. Noakhali	-	1	-
5. Sylhet	5	16	3
6. Dhaka	2	17	-
7. Faridpur	-	3	9
8. Jamalpur	-	1	-
9. Mymensingh	11	10	6
10. Tangail	-	1	-
11. Barisal	6	12	-
12. Jessore	10	13	5
13. Khulna	3	15	-
14. Kushtia	-	5	4
15. Patuakhali	-	6	2
16. Bogra	-	2	8
17. Dinajpur	-	4	7
18. Pabna	4	14	-
19. Rajshahi	8	9	-
20. Rangpur	7	11	-
Bangladesh	11	20	9

Source : Based on Table - 3.38.

100.0 per cent (20 regions) urban centres and Noakhali Jamalpur, Tangail regions belonged to the highest and Chittagong is the lowest rank in order of their size classes. In case of small towns, CHT belongs to the highest rank and Faridpur to the lowest rank.

To summarise this section, we have clear idea that the percentage distribution of rapid growing and slow growing towns across various size classes of urban centre gives us interesting results. Thus, we have seen from the above discussions and tables that the incidence of rapid growing towns goes down as one moves from higher to lower order size categories. The size-class distribution of stagnating or decreasing towns, however, is just the opposite. This suggests that there is a distinct relationship between the size category and the growth pattern of urban centres. In the case of underdeveloped regions, however, the percentage of rapid growing towns in the bottom two categories is relatively high. It is also important to note that, while the percentage of rapid growing towns went up in all the size-categories, the increase in the case of the Class I cities is relatively high. Similarly, the decline in the percentage of stagnating or decreasing towns is considerably large in the case of the cities and Class II towns, compared with that of the other categories.

3.6.0. Process of Urbanization in Bangladesh:

Although the focus of the present study was primarily on the country's twenty major regions (former greater districts), changes in Bangladesh's towns is of special concern to us here. For this reason, towns with over 5,000 urban population from 1951 to 1981 were selected for the study. Rural-urban population migration, changes in the dominance of the agricultural sector, and a rapidly changing urban hierarchy indicate that the urbanization process in Bangladesh is at the starting point and will become an issue of concern in the future.

As has been pointed out, larger part of the population change in the urban centres is caused by natural growth. Migration, whether in or out, is the minor component of such change, though given the large absolute numbers involved, changes in migration levels can still be very significant. As a proportion of total population change in migration is estimated by the following method:

$$\text{Migration} = \frac{\text{1981 "Population of the Region} - \text{1974 Population of the Region}}{\text{1974 Population of the Region}}$$

$$\frac{\text{1981 Pop. of the country} - \text{1974 Pop. of the country}}{\text{1974 Pop. of the country}} \times 100$$

One can say that migration is partly a response to employment opportunities, real or perceived, where migrants go will be substantially conditioned by investment and

likely new employment distribution. On the other hand, other factors will influence pushing out migrants from particular areas - landlessness or natural disasters, for instance. Thus the investment pattern is likely to have a greater effect on where migrants go rather than where they come from. However, migration as a proportion of total urban population has been small and only part of this proportion would have moved in response to the contemporary public sector investment patterns. Changes in total population distribution caused by investment pattern changes are likely to be limited. Continuation of 195-61, 1961-74, 1974-81 migration trends, however, would mean that future migration patterns would be much more significant in overall population distribution.

Table-3.40 shows the historical pattern of inter-regional net migration. This has been done by calculating the percent population change for each inter-census period for each region and subtracting it from the national growth figure for the same period. The result, whether positive or negative is the estimated district net migration rate for the region. The technique assumes zero international migration and uniform region natural growth rates.

The figures below 100 show out migration and above 100, net in-migration, in the relevant period. Over the whole period, it can be seen that the pattern has been inconsistent. Regions showing consistent in or out migration for a series of intercensal periods in the first part of the

Table: 3.40

Historical Pattern of Net Migration 1901-1981

Regions	1901-1911	1911-1921	1921-1931	1931-1941	1941-1951	1951-1961	1961-1974	1974-1981
1. Chittagong	102.4	101.4	104.5	101.9	107.4	108	107.1	103.5
2. CHT	140.2	107.0	116.1	98.0	116.8	113.7	89.9	126.0
3. Comilla	105.7	104.4	106.3	108.4	98.4	94.1	91.2	96.8
4. Noakhali	104.9	107.7	108.8	111.9	102.7	82.4	94.4	96.4
5. Sylhet	101.3	97.2	100.2	96.9	108.2	92.2	95.2	97.2
6. Dhaka	102.8	102.9	101.7	104.5	96.6	104.1	112.5	107.8
7. Faridpur	100.9	98.3	99.5	104.6	102.4	95.7	86.6	95.8
8. Jamalpur	106.3	101.6	98.9	99.5	97.3	96.2	100.8	97.7
9. Mymensingh	106.5	101.5	99.0	99.5	97.0	101.6	93.6	97.7
10.Tangail	106.4	101.4	99.0	99.5	92.6	99.7	98.5	96.2
11. Barisal	96.1	103.5	105.5	101.3	96.2	94.7	86.9	97.3
12. Jessore	87.9	94.2	90.5	91.3	100.6	108.0	110.2	99.5
13. Khulna	99.8	101.3	103.6	101.4	106.9	96.6	106.0	99.0
14. Kushtia	86.1	87.6	96.1	95.9	96.2	111.2	119.8	100.6
15. Patuakhali	96.1	106.9	105.2	101.4	94.4	97.3	84.4	101.1
16. Bogra	106.0	98.2	96.5	94.3	101.6	102.3	100.1	100.7
17. Dinajpur	94.6	95.9	94.2	90.1	101.6	105.2	109.0	102.8
18. Pabna	91.4	98.4	96.8	98.98	93.6	102.5	102.0	100.5
19. Rajshahi	96.1	92.9	91.2	92.3	100.5	106.7	110.2	102.2
20. Rangpur	101.4	98.2	96.5	92.6	100.5	109.7	101.9	97.2

Notes : Estimated by calculating the difference between he natural growth and corrected trend figures per regions, adding them together and expressing them as a percentage of the totol population. Half of this resulting percentage is assume to be the migrant population as one half will be in-migrant the other half out migrants.

Source: Bangladesh Bureau of statistics, 1991 (Interpolated).

century switch over to a consistent opposite trend for the latter part. Thus Comilla, Noakhali, Barisal, Dinajpur, Bogra, Rajshahi and Rangpur all show 30- 40 years of net in or out migration in the urban areas followed by a similar lengthy period of the opposite trend. Only Chittagong region shows constant immigration over the whole century. Even Dhaka region shows imigration in one inter-censal period. However, there has been considerable consistency since 1941. Nineteen out of the twenty regions show consistent movement in 3 or 4 out of 4 inter-censal periods, while 13 regions show consistency in the 3 periods since 1951. There is evidence of a fairly well-established pattern, though a pattern which, historical trends show, can be broken.

Now, if we consider the process of urbanization in Bangladesh during 1951-1981, the distribution of population by regions has been remarkably consistent. However, Table 3.41 shows that the percentage increases were remarkable during 1951 - 61, in the Khulna region (149.28 per cent), whereas Dinajpur and Barisal shows the decreased value (-) and all other regions have also increasing rate for that period. The share of urban population of metropolitan cities like Dhaka, Khulna, Chittgong, Rajshahi have shown increasing percentage during 1961-74 census periods and Barisal, Mymensingh regions have shown very low percentage increases. During 1974 - 81 census period, we have seen from the Table that Noakhali region had the highest

percentage increase. During the same period Dhaka SMA population increased insignificantly than other regions of the country. Chittagong Hill Tracts, Sylhet, Barisal regions had significant changes in percentage of urban population. If we consider the 1951-81 census periods, we observe that in Noakhali, Jessore, Khulna region the urban population increased and the rate was 1772.73, 1075.68, 1305.80 per cent. The urbanization process hence is going on very fast in the country as well in as the regions.

The population of Bangladesh will continue to grow rapidly upto the first quarter of the next century, and the most likely population size in the year 2000 and 2025 will be 145.80 and 219.38 million respectively (UNO, 1987). Urbanization will proceed at a faster rate because rural areas will be incapable of absorbing all future rural population. An estimate of the urban population in Bangladesh in the year 2000 and 2025 is 26.62 and 78.76 millions respectively. There will be higher inmigrtion to the larger and high cost urban areas, particularly to Dhaka City. Any future assessment of spatial priorities in an urbanization strategy for Bangladesh emphasize the role of Dhaka, the Capital of the country[19]. Dhaka receives a dis-

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19. Cited in Saleheen, Mesbah-US and Sharif, Raihan (1988), "Urbanization and Problems of Future Urban Growth in Bangladesh" in the Futures of Development (Selections from the 10th World Conference of the World Futures Studies Federations, Beijing. People's Republic of China, 3-8 Sept. 1988, Future Oriented Studies Programmes, August, 1991.

Table: 3.41

Process of Urbanization in SAM'S and Major Urban Centres in Bnagladesh (1951-81)

Regions	Number of Urban Population (in '000)				Percentage Increase 1951-81			
	1951	1961	1974	1981	1951-61	1961-1974	1974-81	1951-81
1.Chittagong*	296	373	1017	1710	26.01	172.65	68.14	477.70
2. CHT	-	23	55	213	-	139.13	287.27	-
3. Comilla	117	139	263	559	18.80	89.21	112.55	377.78
4. Noakhali	22	34	74	412	54.55	117.65	456.76	1772.73
5. Sylhet	61	71	140	495	16.39	97.18	253.57	711.48
6. Dhaka*	411	754	2586	3857	83.45	242.97	49.15	834.44
7. Faridpur	58	79	124	331	36.21	56.96	166.94	470.69
8. Jamalpur	+	+	112	214	+	+	91.07	-
9. Mymensingh	182	240	338	659	31.87	40.83	94.97	262.09
10.Tangail	+	+	116	185	+	+	59.48	-
11. Barisal	132	119	164	558	-9.85	37.82	240.24	322.73
12. Jessore	37	75	192	435	102.70	156.0	126.56	1075.68
13. Khulna*	69	172	610	970	149.28	254.65	59.02	1305.80
14. Kushtia	41	63	167	333	53.66	165.08	99.40	712.20
15. Patuakhal	-	-	40	166	-	-	315.00	-
16. Bogra	36	47	88	203	30.56	87.23	130.68	463.89
17. Dinajpur	77	72	121	274	-6.49	68.06	126.45	255.84
18. Pabna	69	100	228	399	44.93	128.0	75.0	478.26
19. Rajshahi*	85	120	263	545	41.18	119.17	107.22	541.18
20. Rangpur	128	159	279	710	24.22	75.47	154.48	454.69
Banglash	1821	2640	6977	13228	44.98	164.28	89.59	626.41

Note: (+) including Mymensingh Region and

(-) including Barisal region.

* Indicates SMA (Statistical Metropolitan Area)

Source: Computed from Appendix - 3.2.,

proportionate share of public investment and higher central government grants per capita. The growth in the population of Dhaka to probably more than 11 million by the year 2000 will require substantial investments in housing and intra-urban infrastructure. At the national level these urbanization costs could amount to US $.20 billion (in 1983 prices) which might require more than three-fifths of the national investment resource pool generated between 1983 and the year 2000[20].

The growth of large urban centres in Bangladesh leads to competing demands for one feature in all urban areas. These are non-availability of scarce urban space, which derives core area prices upward and households outward. The growth also leads to the major urban problems like housing costs, congestion, transportation system, decaying environmental conditions, unemployment, poverty and social and political disturbances. These problems are all interdependent and are all generated by the process of urbanization in Bangladesh.

Over the past century, the five regions with the highest population have remained in the same top five positions, namely, Dhaka, Chittagong, Khulna, Rangpur, Rajshahi (Table -3.42). While there have been minor variations in the ranking, no district has changed its

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20. United Nations, "Prospects of World Urbanization, 1987," Department of International Economic and Social Affairs, Population Studies, New York.

position during 1951-1961, 1961-1974 and 1974-1981 census series in a significant way (Table-3.43, 3.44, 3.45) and their rank order distribution in Table - 3.46.

It is important to note here that there is a direct association between the rate of growth of SMAS and other major urban centres and rate of urban net in-migration. Out of the 20 specified urban centres, in only two, (Barisal, Rajshahi) does net in-migration play a lesser role in accounting for urban growth than natural growth. This suggests that the prevailing factor behind accelerated urban growth is rural-to-urban migration.

One can say that except for Dhaka, Chittagong and Khulna, there is as yet no evident interaction between the existing potentials of urban economic base and administrative functions and the urban growth rate of the 20 specified towns and cities. Statistically it may be influenced by the significant part played by the informal sector in the urban economy of Bangladesh .

All urban centres other than Dhaka, Chittagong, and Khulna seem to be very prone to changes in urban growth rates and to shifts in town rankings. This suggests that adequate development policies and investment distributions influence Towns/City rankings that is, the growth rate of particular urban centres significantly. The Dhaka, Chittagong and Khulna metropolitan areas play special roles in Bangladesh economy and according to existing evidence an

Table: 3.42

Process of Urbanization in SMA's and Major Towns/Cities (Regionwise) of Bangladesh 1981

Regions Towns/ Cities	Total Urban Population (in Numbers)	RANKING HIERARCHY Percentage of Total Urban Population	Rank of the Towns/ Cities	Deviation*
*Chittagong SMA	1,391,877	-	-	0.81
1.Chittagong	1421,491	13.92	2	0.81
2. CHT	54,405	0.54	20	0.27
3. Comilla	357,358	3.50	7	0.61
4. Noakhali	194,750	1.92	12	0.57
5. Sylhet	252,490	2.47	11	0.68
*Dhaka SMA	3430,312	-	-	-
6. Dhaka	4,081,487	39.96	1	-
7. Faridpur	187,372	1.83	14	0.64
8. Jamalpur	140,029	1.37	16	0.55
9. Mymensingh	404,659	3.96	6	0.59
10.Tangail	109,243	1.07	18	0.48
* Khulna SMA	646,359	-	-	0.57
11. Barisal	265.813	2.60	10	0.65
12. Jessore	306.982	3.01	8	0.60
13. Khulna	763.252	7.47	3	0.56
14. Kushtia	188,293	1.84	13	0.60
15. Patuakhal	64,771	0.63	19	0.30
16. Bogra	117,032	1.15	17	0.49
* Rajshai SMA	253,740	-	-	0.37
17. Dinajpur	149,101	1.46	15	0.55
18. Pabna	287,962	2.82	9	0.63
19. Rajshahi	425,649	4.17	5	0.52
20. Rangpur	432,981	4.24	4	0.42
Bangla-desh	10,215,120	100.0		

Notes: 1. For comparatibility the old districts have been maintained and the bifurcated districts have been adjusted accordingly.
2. Total (Bangladesh) urban population includes population of urban centers with 5,000 population or more.
* 3a. Deviation equals 1981 population divided by predicted population. Predicted population equals Dhaka's population divided by the city "Rank".
* 3b. For 1981 Figures, SMA's are compared with the Dhaka SMA and other Regional Cities are companed with Dhaka region.

Source: Computed from Appendix 3.14.

Table: 3.43

Process of Urbanization in SMA's and Major Towns/Cities (Regionwise) of Bangladesh, 1974

Regions Towns/Cities	Total Urban Population (in Numbers)	RANKING HIERARCHY: Percentage of Total Urban Population	RANKING HIERARCHY: Rank of the Towns/ Cities	RANKING HIERARCHY: Deviation
* Chittagong City	889,760	-	-	1.06
1.Chittagong	905,480	14.46	2	0.80
2. CHT	51,684	0.83	19	0.44
3. Comilla	246,969	3.94	6	0.66
4. Noakhali	69,378	1.11	18	0.55
5. Sylhet	131,918	2.11	12	0.70
* Dhaka City	1679,572	-	-	-
6. Dhaka	2250,505	35.93	1	-
7. Faridpur	114.242	1.82	13	0.66
8. Jamalpur	95,839	1.53	16	0.68
9. Mymensingh	324,120	5.18	4	0.58
10.Tangail	108,847	1.74	15	0.73
*Khulna City	437,304	-	-	0.78
11. Barisal	154,391	2.47	10	0.69
12. Jessore	180,643	2.88	9	0.72
13. Khulna	520,313	8.31	3	0.69
14. Kushtia	151,348	2.42	11	0.74
15. Patuakhali	37,412	0.60	20	0.33
* Rajshahi City	132,909	-	-	0.55
16. Bogra	82,661	1.32	17	0.62
17. Dinajpur	113,393	1.81	14	0.71
18. Pabna	214,519	3.43	8	0.76
19. Rajshahi	246,666	3.95	7	0.77
20. Rangpur	262,493	4.19	5	0.58
Bengladesh	6262821	100.0		

Note: Same as Table - 3.42 and respective year figures.

Source: BBS, 1974

Table: 3.44

Process of Urbanization in SMA's and Major Towns/Cities (Regionwise) of Bangladesh, 1961

Regions/ Towns & Cities	RANKING HIERARCHY			
	Total Urban Population (in Numbers)	Percentage of Total Urban Population	Rank of the Towns/ Cities	Deviation
*Chittagong City	364,205	-	-	1.40
1.Chittagong	372,632	14.04	2	0.95
2. CHT	31,764	1.20	17	0.69
3. Comilla	139,125	5.24	6	1.06
4. Noakhali	29,691	1.12	18	0.68
5. Sylhet	66,202	2.50	13	1.10
* Dhaka City	521,034			
6. Dhaka	785,540	29.61	1	-
7. Faridpur	78,561	2.96	10	1.00
8. Jamalpur	62,912	2.37	15	1.20
9. Mymensingh	153,827	5.80	5	0.98
10.Tangail	23,688	0.89	19	0.57
*Khulna City	127,970	-	-	0.74
11. Barisal	104,805	3.95	8	1.07
12. Jessore	71,157	2.68	12	1.09
13. Khulna	164,537	6.20	3	0.63
14. Kushtia	63,236	2.38	14	1.13
15. Patuakhali	12,325	0.46	20	0.31
* Rajshahi City	56,885	-	-	0.76
16. Bogra	42,076	1.59	16	0.86
17. Dinajpur	71,938	2.71	11	1.01
18. Pabna	99.510	3.75	9	1.14
19. Rajshahi	120,203	4.53	7	1.07
20. Rangpur	159,461	6.01	4	0.81
Bangladesh	2653,190	100.0		

Note: same as Table-3.42 and respective year figures

Source: Census of Pakistan 1961, GOP, 1961.
Vol. 2. EB Tables, Karachi Pakistan.

Table: 3.45

Process of Urbanization in SMA's and Major Towns/Cities Regions in Bangladesh, 1951

Regions/ Towns & Cities	RANKING HIERARCHY			
	Total Urban Population (in Numbers)	Percentage of Total Urban Population	Rank of the Towns/ Cities	Deviation
*Chittagong City	289,981		-	1.73
1.Chittagong	295,854	16.38	2	1.43
2. CHT	6,416	0.36	20	0.31
3. Comilla	116,010	6.42	5	1.41
4. Noakhali	21,657	1.20	17	0.89
5. Sylhet	57,990	3.21	11	1.55
* Dhaka City	3,35,928		-	-
6. Dhaka	411,372	22.78	1	-
7. Faridpur	57,630	3.19	12	1.68
8. Jamalpur	46,264	2.56	13	1.46
9. Mymensingh	114,209	6.32	6	1.67
10.Tangail	21,513	1.19	18	0.94
*Khulna City	42,225		-	1.13
11. Barisal	119,943	6.64	4	1.17
12. Jessore	29,871	1.65	16	1.16
13. Khulna	69,781	3.86	9	1.53
14. Kushtia	36,639	2.03	14	1.25
15. Patuakhali	10,279	0.57	19	0.47
* Rajshahi City	39,662		-	0.83
16. Bogra	32,088	1.78	15	1.17
17. Dinajpur	76,530	4.24	8	1.49
18. Pabna	69,469	3.85	10	1.69
19. Rajshahi	84,569	4.68	7	1.44
20. Rangpur	127,642	7.07	3	0.93
Bengladesh	1805,726	100.0		

Notes: Same as Table-3.42 and respective year figures.

Source: Census of Pakistan, 1951, GOP, 1961, EB Tables, Vol. 3, Karachi, Pakistan.

Table: 3.46

Rank Order Distribution of Urban Population (Regionswise),1951-1981

Regions	Ranking Hierarchy			
	1951	1961	1974	1981
1.Chittagong	2	2	2	2
2. CHT	20	17	19	20
3. Comilla	5	6	6	7
4. Noakhali	17	18	18	12
5. Sylhet	11	13	12	11
6. Dhaka	1	1	1	1
7. Faridpur	12	10	13	14
8. Jamalpur	13	15	16	16
9. Mymensingh	6	5	4	6
10.Tangail	18	19	15	18
11. Barisal	4	8	10	10
12. Jessore	16	12	9	8
13. Khulna	9	3	3	3
14. Kushtia	14	14	11	13
15. Patuakhali	19	20	20	19
16. Bogra	15	16	17	17
17. Dinajpur	8	11	14	15
18. Pabna	10	9	8	9
19. Rajshahi	7	7	7	5
20. Rangpur	3	4	5	4

Source: Based on Table - 3.42, 3.43, 3.44, 3.45.

extrapolation of recent development trends will continue there roles for all the urban centres of Bangladesh.

3.7.0. Index of Intensity of Urbanization:

The index of intensity of urban process can be measured by the following formula :

$$U_I = \sqrt{\frac{X+Y}{2}}$$

Where, $X = \frac{\text{Number of Towns in Regions} \times 100}{\text{Number of Towns in the Country}}$ and

$$Y = \frac{\text{Number of Urban Population in Regions} \times 100}{\text{Number of Urban Population in the Country}}$$

The following Table 3.47 reveals that in 1951, urban process was high in Dhaka, Chittagong regions and the lowest urban process was in the Noakhali regions. In 1961, the CHT had the lowest intensity of urbanization. In 1974, Dhaka had the maximum growth of urbanization (5.38) in between the four census periods, 1951, 1961, 1974, 1981 and Jamalpur had the lowest position in their levels of urbanization process. In 1981, Dhaka and Chittagong were the highly urbanized regions of the country. Jamalpur region had the lowest process of urbanization. In most of the major regions urban process is continuing in relation to industrial development. Thus we can summarize that urbanization process is rapidly

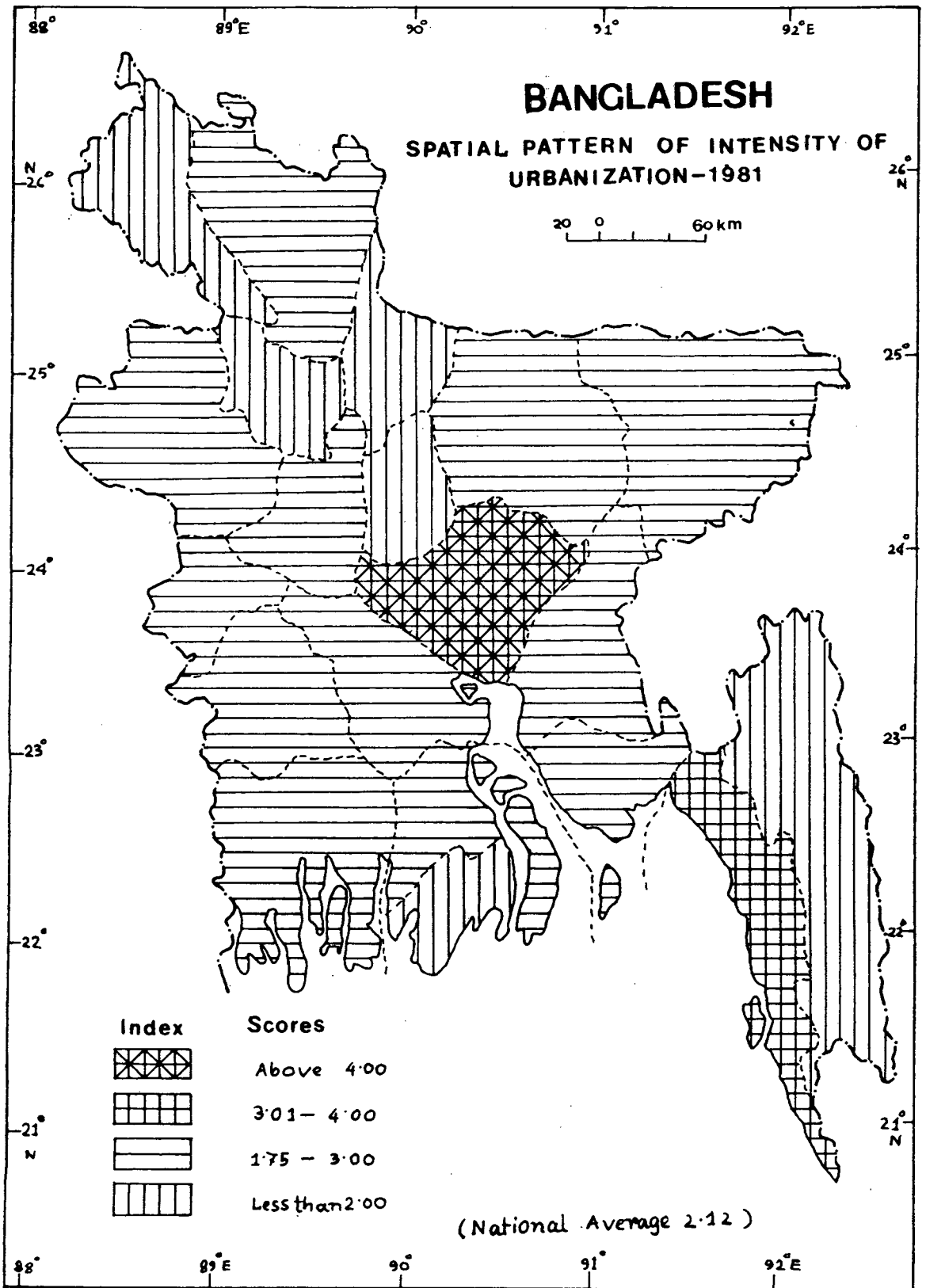
We can categorise the intensity of urban process for 1981 data (Table - 3.48) in 4 major groups as Very High

Table 3.47

Intensity of Urbanization 1951-1981

Regions	Intensity of Urban Process			
	1951	1961	1974	1981
1.Chittagong	3.33	3.14	3.28	3.13
2. CHT	-	1.46	1.39	1.64
3. Comilla	2.33	2.21	2.05	2.21
4. Noakhali	1.44	1.53	1.44	1.89
5. Sylhet	2.31	2.17	1.92	2.15
6. Dhaka	3.87	4.40	5.38	4.47
7. Faridpur	1.95	1.93	1.56	1.77
8. Jamalpur	-	-	1.25	1.40
9. Mymensingh	3.19	2.91	2.34	2.59
10.Tangail	-	-	1.41	1.36
11. Barisal	2.70	2.25	1.65	2.30
12. Jessore	1.99	2.19	1.92	1.95
13. Khulna	2.36	2.68	2.51	2.56
14. Kushtia	2.02	2.14	2.41	1.77
15. Patuakhali	-	-	1.03	1.49
16. Bogra	1.79	1.60	1.47	1.49
17. Dinajpur	2.08	1.75	1.78	1.71
18. Pabna	1.83	1.89	1.99	1.84
19. Rajshahi	2.30	2.23	1.95	2.13
20. Rangpur	2.82	2.53	2.08	2.60
Bangladesh (Mean)	2.39	2.29	2.04	2.12

Source : Computed from Appendix - 3.2 and 3.15



Map-3.11: Based on Table-B.48

Table 3.48

Intensity of Urban Process, 1981

Category (Score)	Major Regional Towns	
Very High (VH) (Above 4.00)	Dhaka	n=1
High (H) (3.01-4.00)	Chittagong	n=1
Medium (M) (1.75-3.00)	Noakhali, Faridpur, Jessore, Kushtia, Comilla, Sylhet, Mymensingh, Barisal, Khulna, Rajshahi, Rangpur, Pabna.	n=12
Low (L) (Less than 2.00)	CHT,Jamalpur,Tangail,Patuakhali, Bogra, Dinajpur.	n=6

Source : Based on Table-3.47

increasing in the industry economy based towns and cities. (VH), High (H), Medium (M) and Low (L). In these categories we have found that Dhaka and Chittagong regions have high intensity of urbanization. Medium intensity of urbanization process continuing in the regions of Comilla, Noakhali, Sylhet, Faridpur, Mymensingh, Barisal, Khulna, Jessore, Kushtia, Pabna, Rajshahi, and Rangpur. Regions of CHT, Jamalpur, Tangail, Patuakhali, Bogra, Dinajpur. have low intensity of urbanization.

3.8.0 : Conclusions :

The major conclusions derived from this chapter are:

1. It has been observed that there are temporal and spatial variations in the country's regional patterns. Among the demographic variables, there have been

significant spatial variation as well as temporal variation in the characteristics of urban population.

2. The level of urban growth in Bangladesh is unquestionably rising at both national and regional levels. Thus we have observed that the share of urban population was 2.43 per cent in 1901 and the expected urban population will be 36.80 per cent in 2015. The most phenomenal growth of urban population took place during 1961-74, the increase in population being as high as 137.57 per cent.

3. Improvement in level of urbanization and urban growth rate during 1970's and 1980's is still unable to raise this country in the category of higher urbanized regions of the world. It is also noticed that there was a higher urban growth rate in Bangladesh during 1951-81 and that the process of urbanization during 1951-81 was faster than the process of urbanization during 1951-61, 1961-74. But still level of urbanization is low in this country.

4. During the last eighty years, during 1901-1981, the percentage of urban to total population in the country has increased two fold. It means there is slower pace of urbanization within the regions of Bangladesh. It is also important to note that Bangladesh is not a very urbanized country but it has emerged significantly on the scene of urbanization due to higher growth rate in 1951-81.

5. Medium-sized urban centres (with 25,000-99,999 population) emerged in the middle of the present century and they covered a very low percent of

population.

6. Considering the growth in the number of towns along with percentage share in urban population Class III towns (25,000-49,999) contained the highest number of towns (33.77 per cent) in 1981. We have also observed that proportionally more people were living in larger urban centres or in the Class I cities in each successive census years, particularly since 1961. We have also observed that during the period 1901-1931, 1931-1951 and 1951-81 urban population was distributed differently in the urban centres in Bangladesh.

7. The accelerated growth of urbanization in Bangladesh in recent time has not been evenly distributed among urban centres. The capital city and other large urban centres, through their own natural population increase and rural-urban migration have been gaining substantial proportions of the urban population increases. It is also observed that the major urban centres were more or less evenly spread among the regions during the census years 1951-81. The results also show that some major urban centres are growing fast while few are growing very slowly. It is also observed that for the time being the number of urban centres were growing in the highest as well as in the lowest category. The highest variation was 80.60 per cent in 1961-74 and the lowest was 42.63 percent in 1974-81. It was also observed that urban population growth varied during 1951-61 to 1951-81 census periods and the rate of variation was higher in the present decades.

8. The disparity in urban growth in the regions of Bangladesh was generally of a much higher order in the 1950's, 1960's, 1970's than in the 1980's and was also of a much higher order in the smaller order towns than in the cities.

9. It was observed that backward regions have the highest density of towns (i.e. Bogra, Dinajpur, Faridpur, Jamalpur etc.) and developed regions have the lowest density of town (i.e. Dhaka, Chittagong, etc.).

10. Urban population density varies from census to census as well as from region to region except in Dhaka region.

11. Large cities are growing faster than medium and small towns.

12. The overall picture for the urban population during 1951-81 shows that on an average urban population growth by per sq.Km. of urban land area was higher in all the regions of the country. This means that population is increasing in largely the big urban centres of the regions because of rural-urban migration. The results also indicated that the neighbouring urban centres were very much connected with the large urban centres and therefore the big urban centres are growing fast in respect to the population growth and to the expansion of the urban land area.

13. The percent of urban population to total population has increased in almost all the regions of Bangladesh and the highest increase has been observed in Noakhali, Khulna, Jessore, regions during 1951-81. In the spatial

variation it has been found that some few regions like Dhaka, Chittagong, Khulna have high percentage of urban population, while all other regions have very low percentage of urban population to total population.

14. The distribution of urban population in different size-classes in different regions to total urban population in 1981, shows that more than 70% urban population was concentrated in Dhaka(93.98%), Khulna (84.68%), Pabna (74.95%) and Chittagong (37.92%) regions. It was also observed that in Noakhali (100.0%) and Tangail (100.0%) the urban population concentrated in medium-sized towns CHT (33.08%), Patuakhali (25.71%), Sylhet (23.35%) regions have more population in small-towns to total urban population. Thus, we have observed in 1981 ranking of different size-classes of towns in Bangladesh that Chittagong region and then Dhaka region had the higher-order ranks for class I cities, on the other hand Mymensingh had the lowest rank. CHT, Noakhali, Faridpur, Jamalpur, Tangail, Kushtia, Patuakhali, Bogra, Dinajpur have no class I cities. For the medium-sized towns Noakhali, Jamalpur, Tangail had the top rank and Chittagong, Dhaka, Sylhet had the lowest rank. In small-size category CHT had the highest and Faridpur had the lowest rank and most of the regions had no small towns.

15. It has been observed that the percentage distribution over the period indicated that the annual compound growth rate was the highest in the Noakhali region (10.26%) during 1951-81 period . The lowest compound growth rate of urban population was in Dinajpur region

(4.32%) in the same period. The corresponding figures of annual compound growth rate of urban population was little different during the periods 1901-11 upto 1941-51. After these periods the rate was higher.

16. In most of the major regions urban process is related to industrial development. Thus we have observed that in the industry based towns and cities are rapidly increasing. Dhaka, Chittagong regions have high intensity of urbanization and CHT, Jamalpur, Tangail, Patuakhali, Bogra, Dinajpur have low intensity of urbanization during 1951-81 period.

17. Share of urban population gradually increased over the years. The overall urban population increased from 4.38 to 15.18 per cent during 1951-81.

18. According to the L.Q. value we have observed that only in two regions (10%) urban concentration is more than other regions of the country. Four regions (65%) belonged to low levels of urbanization and only two regions (10%) belonged to moderate levels. L.Q. also showed decreasing concentration of urban population in certain regions namely Bogra, Faridpur, Tangail regions. Other regions have witnessed increasing concentration.

19. We have observed that the mean distance between towns of over 5,000 population was 7.18 Km., and the national average of the maximum distance to the nearest town was 35.52 Km. The distance from the nearest town was least in Noakhali region (3.39 Km) followed by Patuakhali, Bogra, Tangail, Barisal region which are the least

urbanized regions from the point of view of maximum distance to the nearest town.

20. In terms of the weighted Composite Index of urbanization, Dhaka, Chittagong and Khulna have a high composite index. Dhaka has occupied a higher position in comparison to all other regions of Bangladesh because of higher number of towns. Weighted urbanized index is very low in the Jamalpur, Bogra, and Tangail regions.

Patterns of Regional Development in Bangladesh

CHAPTER IV

4.0.0. Levels of Economic Development in Bangladesh

The Study of the Levels of economic development in different countries vividly brings out the fact that development does not occur evenly in the various regions of an economy. Among the factors responsible for such uneven spread of development are both geographical and historical. Resource endowment of a region is a changing concept and its dynamics is influenced by the structure of demand, the current state of technology, the cost of transportation and economic organisation. While it is true that the resource endowment in the particular context does map out the possible pattern of development in the economic variables, the development experience indicates that historical accidents have also played significant part in concentrating economic development in particular regions.[1]. Thus, development by its very nature is a complex process. While one observe a primordial relationship between the territorial distribution of natural resources and the quantum and direction of regional development, the relationship is not always direct, nor territorially restricted in its expression. The development of natural resources implies a multidimensional connection among a number of factors including capital

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1. See Kumud Pore (1987), "Strategy of Regional Planning : Experience in Maharastra" in Regional Economic Planning in India, A.C. Angrish (ed.), Twenty-First Century Publishers, Meerut, 1987, Chapter-7, p.70.

formation acquisition of suitable technologies and mobilisation of manpower[2]. In fact, development is influenced by the geographic pattern of distribution of various indicators (such as manpower, education, new technologies, agricultural development, industrial development, electricity supplied; surfaced road length and modes of transportation etc.) in a given regional setting.

Thus, to understand the regional variations in levels of economic development and wide disparities among the regional levels or the standard of living of the urban and rural people in different regions, one has to examine in detail the sources of growth and factors influencing growth and structure at the regional level. The approach to be followed is guided primarily by the collected available data at the regional level. The regional level analysis in terms of factor inputs is however not possible. Therefore, before deciding on the approach to be followed for study of sources of growth and development, it is essential to assess the nature of both inter-regional and intra-regional disparity and analyse the pattern.

According to Misra, Sundaram and Rao (1974)[3], development policies when pursued without active spatial considera-

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2. Aijazuddin Ahmad (1992), "Natural Resource System: Regional Development and Disparirites," in The Green Age, vol.I, No.2, Oct-Dec. 1992, p.7.

3. R.P.Misra, K.V. Sundaram and V.L.S.P. Rao (1974), "Regional Development Planning in India, Delhi"; Vikas Publishing House Pvt. Ltd., p.

tions are likely to result in uneven growth across regions. It has been argued that the sectoral approach to development which is centralised in nature and aggregative in policies has generated regional imbalances in development. Thus regional disparities also depends on various factors not only the inputs of development but also the geographical space. In geographical studies different characteristics of physical space into regions is a traditional part of the geographical analysis. The concept used in this study treat spatial units as regions that are homogeneous or uniform within definite geographical and similar social and economic phenomena. According to Sharif[4] (1992), that approach towards specific division of space involves systematic analyses of the interplay of critical variables through identification and assignment of resource patterns and their interdependence on the 'economic landscape' or 'economic regions'. Thus, economic landscape is the major issue for identification of different variables in a given economic region, which influences the level of development of the particular region.

The economic landscape was defined by McCarty and Lindberg (1966, p.87) to "designate the systems of interrelationships among phenomena that appear in particular

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4. A.H.M. Raihan Sharif, (1992), "Regional Structure of Development in Bangladesh" in Bangladesh : Geography, Environment and Development, Elahi, K.M., Sharif, A.H.M.R. and Kalam, A.K.M.A. (ed.) Bangladesh National Geographical Association, Dhaka, p.211.

areas". Thus development in the economic region can be seen in two forms, (a) the intensity of economic activity on the landscape and the levels of population distribution in urban and regional space and, (b) welfare which that economic activity supports. It is implicit in this concept that some characteristics of economic regions are intangible, and also that many of them are continuously varying across geographical space. But the need to measure development for the economic regions involves the use of specific measures for geographical units.[5] Ginsburg (1961)[6] and Berry (1960)[7] have studied some indicators in cross-national studies for measuring the geographical disparities of economic and social aspects of development. The same variables can also be used to identify the regional variations within a nation[8]. For less developed countries like Bangladesh a number of writers have proposed systems or sets of territo-

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5. Ibid. p. 211.

6. N. Ginsburg, (1961), "Atlas of Economic Development", Chicago University of Chicago Press.

7. B.J.L. Berry (1960), "An Inductive Approach to the Regionalisation of Economic Development", Ginsburg, N. (ed.) Essays on Geography and Economic Development".

8. R. Lee, (1983), "Development, in Johnson, R.J (ed.), "The Dictionary of Human Geography, England, Blackwell.

rial and social indicators (Andrews[9], 1973, Cant[10], 1975; Gostwaski[11], 1974; Wilson[12], 1973).

There are a plethora of writings on the indian as well as the third world experience about measuring the levels of economic development and inter-regional and intra-regional variations. The notables are Mills and Beckar (1986) [13], Kundu and Raza (1982)[14], Kundu and Sharma (1983) [15], Kailash

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9. F.M. Andrews, (1973), "Social Indicators and Socio-Economic Development", Journal of Development Areas, Vol.8.

10. R.G. Cant, (1975), "Territorial Socio-Economic Indicators in Development Plans in the Asian Region, International Social Science Journal, Vol.27.

11. Gostkowski, (1974), "Toward a System of Human Resources Indicators for Less Developed Countries,", Warsaw, Institute of Philosophy and Psychology, Polish Academy of Sciences.

12. R.K. Wilson (1973), "Socio-Economic Indicators Applied to Sub-Districts of Papua and New Guinea", Discussion Paper No.1, Melbourne, Economic Geography Department, Melbourne University.

13. Edwin S. Mills and Charles M. Beckar (1986), "Studies in Indian Urban Development", Oxford University Press, New York, U.S.A.

14. Amitabh Kundu and Moonis Raza (1982), "Indian Economy: The Regional Dimension", JNU, New Delhi.

15. Amitabh Kundu and R.K. Sharma (1983), "Industrialisation, Urbanization and Economic Development in India - The Need for Alternate Explanation", Urban India (Forthcoming)

Mahto (1985)[16], Hemlata Rao (1987) [17], Sita and Prabhu (1989) [18], Chowdhury (1992) [19] and Tripathy (1993)[20].

They emphasise on the economic aspects which is the more significant variable reflecting the development in a particular region as well as the macro-economic development of the country as a whole.

There are very few works available in this context in Bangladesh. The economic development on a regional basis was measured by the contributors such as Alam [21] (1987),

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16. Kailash Mahto (1985), "Population Mobility and Economic Development in Eastern India," Inter-India Publications, Delhi.

17. Hemlata Rao (1987), "Strategy for Developing Micro-Regions : An Exploratory Exercise", in Regional Economic Planning in India, A.C. Angrish (ed.), Twenty-First Century Publishers, Meerut, 1987.

18. K. Sita and K. Seeta Prabhu (1989)," Levels of Development and migration: Case of South Konkan," EPW, January 7, 1989.

19. Uma Datta Roy Chowdhury (1992), "Inter-State and Intra-State variations in Economic Development and Standard of Living", EPW, December 5-12, 1992.

20. Kamala Kanta Tripathy (1993), "Population and Development: An Economic Perspective", Manak Publications Pvt. Ltd., New Delhi.

21. Shamsul Alam (1987), "Urbanization and Spatial Development in Bangladesh", The Rajshahi University Studies, (Part-B) XV: 123-136, 1987.

Haque [22] (1985), Islam [23] (1986), Mohit[24] (1989), Sharif [25] (1992) and few others. Their contribution analyses the economic variables for measurement of economic development and their levels on the regional basis and their variations in respect to time and space. Thus the present study attempts to analysis the selected economic variables which reflect the regional development and the inequality of development.

4.1.0. **Measuring Economic Development**

This Chapter will present a concrete picture of the spatial economic development in the major regions of Bangladesh. The discussion will be based on selected indicators which were collected from the government documents. "Factor Analysis has been used for measuring the levels of economic development in Bangladesh.

The choice of indicators is critical to the analysis of inter-regional disparities. A major constraint was the non-

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22. Chowdhury Emdadul Haque (1985), "Labour Force and Development: " A Regional Perspective on Bangladesh", Population Studies Centre, Jahangirnagar University, Dhaka.

23. R. Islam (ed : 1986), "Bangladesh : Selected Issues in Employment and Development",

24. M.A. Mohit (1989), "Regional Development & Urban Growth in Bangladesh : A Case for Small & Medium Town Development", Bangladesh National Geographical Association (BNGA).

25. A.H.M. Raihan Sharif (1992), op.cit.

availability of data at the regional level regarding imortant facets of development. In the present study, the choice of indicators was affected by the specific characteristics of the study regions. Thus, for the purpose of analysis the regional pattern of economic development needs to be measured in terms of precise and meaningful indicators.

The following twenty indices have been selected for the present study (see Chapter-I) :

1. Total Area in KM^2 (including Rivers) - X_1
2. Area (excluding Rivers & Reserve Forest) - X_2
3. Total Population (in thousands) - X_3
4. Density of Population (per sq. km) - X_4
5. Percentage of Urban to Total Population - X_5
6. Percent of Urban Centres of the Region to the Total Urban Centres of the country (above 5,000 population) - X_6
7. Ratio's of Urban Industrial Concentration in Bangladesh by Regions - X_7
8. Percentage of Workers to Total Population by Region - X_8
9. Per Capita GDP (at Factor Cost) in Taka - X_9
10. Per cent share of GDP from Agricultural Sectors (at c.m.p.) - X_{10}
11. Per cent share of GDP from Industrial Sectors (at c.m.p.) - X_{11}
12. Per cent share of GDP from Service Sectors (at c.m.p.) - X_{12}
13. Per Capita Value added (in Tk.) from agriculture by Region - X_{13}
14. Intensity of Cropping - X_{14}
15. Regionwise average Daily wage of Agricultural Labour (Tk.per day) - X_{15}
16. Hospital bed per lakh population - X_{16}
17. Telephones per lakh population - X_{17}
18. Post Officers per 1000 population (in numbers) - X_{18}
19. Adult literacy Rate in percentage - X_{19}
20. Secondary School Attendance per 1000 population (Aged 11 - 16 years) - X_{20}

There are two sets of indicators which have been selected for 1970s and 1980s for measurement of levels of

economic development on a composite scale. As we know that the progress of a region or a country can often be measured in terms of aggregate measures over time, the use of same variables as measures to compare different regions (which have different sizes) within a country requires the calculation of relative measures in two main forms -(a) per capita measures and (b) percentage measures, indicating the promotion of resources (land, population, capital etc.) allocated to particular activities. As economic activities are composed of a number of major elements in a functional complex, each is related to the other both functionally and statistically. Therefore, the analysis of the economic region necessitates the selection of balanced (same for the 1970s and 1980s) set of variables representing various aspects of the economic development of the country. Thus, the levels of development can be measured by each variable score which we treat as the 'factor score' or the 'composite score' of the variables for each region. Thus the composite score for the regions is calculated for 1970s and 1980s, which will be helpful for comparing each variable in a specific region.

4.2.0. Analytical Procedure of Principal Component Analysis (PCA):

To identifying the levels of economic development two sets of indicators have been obtained using 'Principal Component Analysis'. In principal component analysis the interrelationships between many variables are considered

simultaneously without any assumption of causality between them; Which requires simplification and determination of the significant and independent elements. Factor analysis or principal component analysis provides one of the most powerful methods to meet problems of this nature Haggett[26] (1969), and can show both how the variables combine to account for the variability of the data and how the individual units respond in terms of few factors to be extracted.

Thus, the most common approach in social science research is to take the Correlation Matrix as the basis, work out the first few principal components that explain an 'adequate percentage' of the total variation and then to categorise the observations (scores on that component can be used to describe geographical variations in those variables in a synthetic form; here a geographical unit is that of a region), using 'homogeneity principle' or the synthetic principle on the basis of the components[27]. This approach has been considered inappropriate in the present study for a number of reasons. According to Kundu and Raza[28] (1982), there are three reasons for the inappropriate assumption :

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26. P. Haggett, (1969), "Locational Analysis in Human Geography", London : Arnold.

27. For a detailed discussion on the traditional principal component approach, see A. Kundu (1980), "Measurement of Urban Process - A Study of Regionalisation, Popular Prakashan, Bombay.

28. Kundu and Raza (1982), Op.cit.

(i) the basic assumption in treating the first principal component through this method as the composite index, is not appropriate as the highly correlated indicators are more important for measuring economic development in a prticular region. This may not always be acceptable.

(ii) it does not consider the disparity factor in designing weightages for the indicators as it begins by stgandardising them, whereby the variations (also the means) are made equal.

(iii) in most cases it becomes necessary to take more than one principal component to explain an adequate percentage of the variation which brings back, in some form, the problem of composition.

Any composite index obtained through an aggregation of the principal components would explain a lesser percentage of the variation than the first component. Thus, it should be noted that the major principal component analysis yields a first principal component (Factor 1) that accounts for maximum variance, while the subsequent ones account for decreasing proportions of the total variance.

A discussion of the detailed statistical procedure of principal component Analysis (PCA) is rather complex and in fact, outside the scope of this study, but the basic assumption behind the analysis is that in the matrix of intercorrelated variables there are some common factors running through the data. These common factors are

extracted and expressed in the form of different factors. The main outline of the procedure in bringing out these factors is given below , as discussed by Sultana[29]:

(i) analysis of data matrix containing measurements on XY-variables for each of n-units of observations (regions);

(ii) computation of maximization intercorrelated matrix (r) of the country;

(iii) principal component analysis of the correlation matrix of the X-transformed variables;

(iv) rotation of the resulting eigen vectors to a normal varinox position. The eigen vector associated with the longest eigen value, when the basic matrix is positive, gives the system of weights to construct the principal component which has been taken as the composite index for each set of indicators in the present study;

(v) Computation of the factor scores on the variables on the rotated factors;

(vi) groupings X-observations in a way that at every step maximum internal homogeneity of the variables is ensured.

Thus, eigen vector used here is also normalised to the highest eigen value used. The efficiency with which the

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29. See Sabiha Sultana (1993), "Rural Settlements in Bangladesh: Spatial Pattern and Development", Graphosman, Dhaka, p.109-116.

principal component relects the combined picture of the given X-variable is measured by the Ratio of the highest eigen value of R to X_n.

Besides this program, various descriptive statistics of the variables (Appendix 4.1a, 4.1b and 4.2a, 4.2b) and correlation matrix for study units (Table - 5.6 and 5.7, Chapter V) were computed. The interpretation of correlation coefficient (r) is self-evident in the matrix.

The resultant factors affecting groupings of variables controlling the levels of economic development in a factor score and discussed below.

4.3.0 Use of Principal Component Analysis (PCA) to explain the levels of Economic Development.

Any development depends on certain socio-economic factors as well as the geographical location. Thus, we have selected related variables for measuring the levels of development for Bangladesh. Development patterns also vary according to types of socio-economic and physiographic characteristics. Thus, we have obsered that regions with abundant natural resources usually work out as resource-based regions. We also find that some areas are agriculturally developed, some are industrially developed and some are service or busiess centres. That patterns depends on the relationship between variables explaining general patterns of economic development for the specific region. To explain this particular aspect and to identify

the determinants influencing economic development and pattern the principal component analysis technique has been used. The analysis allows collapse of the data set of variables linearly to a smaller number of controlling factors by means of PCA method explained earlier. This method transforms a set of variables into a set of composite variables that are orthogonal to each other. The resultant major factor scores bringing out the controlling variables explaining economic development and their levels in Bangladesh are discussed in the following sub-section for the 1970s and 1980s separately.

4.3.1.PCA Explaining the Levels of Economic Development for the 1970s:

As mentioned earlier, we have selected twenty variables for the present study. Variables X1, X2, X3 and X4 are the 'geodemographic' aspects, which we have excluded for this analysis for measuring the levels of development. Sixteen variables (X_5 to X_{20})cover major aspects of economic development of Bangladesh. The data of these variables, in given in Appendix-4.1a and 4.1b. The matrix of inter correlations,'R' among them is worked out through the computer[30] from Table - 5.6, Chapter V. From Appendix - 4.1 five (5) major factors. yielding controlling variables for economic development pattern in Bangladesh have been work out (Table-

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30. The entire PCA for 1970's was done using the SPSS/PC+Computer Program on an IBM-PC at the computer unit of CSRD, J.N.U., New Delhi.

4.1). The five factors identified the variables (Table-4.2) as having dominant

Table: 4.1
Percentage of Total Variance[31]
Explained by Each Factor,
Levels of Economic Development in Bangladesh (1970's)

Factor	Eigenvalue	%age of Variance	Cumulative %age of Variance
1	7.53163	37.7	37.7
2	5.38630	26.9	64.6
3	2.38598	11.9	76.5
4	1.78618	8.9	85.5
5	1.02277	5.1	90.6

influence in explaining economic development pattern in Bangladesh. Sixteen variables were then subjected to a principal axes solution deriving component scores (Table-4.3) which can be used as composite indices of economic development and their regional patterns.

The above mentioned fctors registered high communalities in almost all of the five major factors (Table-4.2). The rotated factor loadings on five factors are presented in Table-4.2. In this table, the column showing

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31. 'Total Variance' is the sum of the variance of each variance. Since there are 20 variables and each is standardized to have a variance of 1, the total variance is 20. Table - 4.1 shows the percentage of variance that the five factors together account of 90.6 per cent of the total variance and are explained in this chapter.

communality indicates that almost all of the sixteen variables for this study are fully represented, so that the extent to which the components account for differences

Table : 4.2

Rotated Factor Matrix of Variables on Five Factors, Levels of Economic Development in Bangladesh (1970's)

Variable	Communality	Factors				
		1	2	3	4	5
X_1	.97797	.04543	.95116	.18397	.18284	-.06273
X_2	.96832	.02480	.95969	.18093	.11579	.02356
X_3	.94930	.32797	.12476	.89454	.08505	-.13691
X_4	.91885	.44536	-.58304	.61417	-.05452	.01978
X_5	.96457	.91241	.01172	.34293	.04370	.11146
X_6	.81449	.78439	-.04086	.39831	.08746	.17680
X_7	.93207	.93369	.17623	.04100	.04427	.16000
X_8	.94559	.00219	.43733	-.01393	.79175	.35674
X_9	.90427	.10171	.65066	-.43841	.13654	.50962
X_{10}	.95848	-.90697	.16514	-.23121	-.13067	.19514
X_{11}	.94569	.95049	.02884	.14202	.14546	-.01011
X_{12}	.88551	-.15381	-.63956	.28766	-.05067	-.60622
X_{13}	.90013	-.15674	.59130	-.42260	.36454	.46309
X_{14}	.92373	-.10967	.07001	.28758	.81932	.39092
X_{15}	.81929	.30412	.16314	.07474	.83310	.02350
X_{16}	.78708	.25232	.01881	-.09133	.14053	.83365
X_{17}	.96819	.95070	.01586	.14337	.17045	.12044
X_{18}	.90393	.30112	.01180	.74872	.20609	-.45833
X_{19}	.88007	.32564	.02430	.00278	.84080	-.25785
X_{20}	.76532	.46556	.05583	.72472	.14140	.01563

Note: Selected variables X_5 to X_{20} (16 Variables).

Table 4.3

Levels of Economic Development by Scores of Principal Components in Regional Levels, 1970's

Regions	Factor Score (Rank) F1	F2	F3	F4
1.Chittagong	2.03674 (2)	.04978 (7)	- .87135 (18)	.54990 (4)
2. CHT	- .15366 (7)	2.64108 (1)	-1.82185 (20)	.29771 (8)
3. Comilla	- .18941 (8)	- .30040 (11)	1.18089 (5)	.36638 (6)
4. Noakhali	- .30444 (11)	- .81152 (17)	- .36868 (12)	1.00155 (2)
5. Sylhet	- .20527 (9)	1.39305 (3)	.41435 (6)	.06871 (10)
6. Dhaka	3.30138 (1)	- .30371 (12)	1.49801 (1)	.04263 (11)
7. Faridpur	- .69355 (18)	.02079 (8)	1.20057 (4)	- .15603 (16)
8. Jamalpur	.08200 (4)	- .43533 (14)	- .69696 (16)	-3.91808 (60)
9. Mymensingh	- .91342 (20)	.75184 (4)	1.95605 (2)	- .21312 (19)
10.Tangail	- .53674 (17)	-1.48144 (20)	- .15032 (10)	.13861 (9)
11. Barisal	- .39803 (16)	.42461 (13)	- .22578 (8)	1.10895 (1)
12. Jessore	- .28116 (10)	- .12778 (10)	- .07825 (9)	- .05717 (13)
13. Khulna	.73510 (3)	1.42737 (2)	- .50385 (13)	.00008 (12)
14. Kushtia	.05670 (5)	- .05670 (5)	-1.13222 (19)	- .12428 (15)
15.Patuakhali	- .39076 (14)	-1.13222 (19)	- .68874 (15)	.67104 (3)
16. Bogra	- .39135 (15)	- .98611 (18)	- .63389 (15)	.38383 (5)
17. Dinajpur	- .38872 (13)	- .05909 (9)	- .53037 (14)	.31677 (7)
18. Pabna	- .12279 (6)	- .75526 (16)	- .32164(11)	- .12014 (14)
19. Rajshahi	- .37344 (12)	.67069 (5)	.34077 (7)	- .18410 (18)
20. Rangpur	- .86921 (19)	.55163 (6)	1.25202 (3)	- .17325 (17)

between the variables varied insignificantly between the regions. On the other hand, it is also observed that the variables which are summarised by the five major factors, are fairly sufficient to explain the desirable features of the economic development pattern for the 1970's in Bangladesh.

The eigenvalues of the matrix R, have already been worked out in Table-4.1, it should be noted that the first factors among those five factors are by far the most important and explain the basic pattern of variables responsible for development in Bangladesh. Thus, it can be seen from Table-4.1 that after fourth factor, each additional factor adds relatively little to the level of explanation. The first four factors account for 85.5 per cent of all total variables mentioned in Table-4.1. The eigen vectors corresponding to the five eigen values given above normalised to unity are given in Table-4.2 The fifth factor is not considering here.

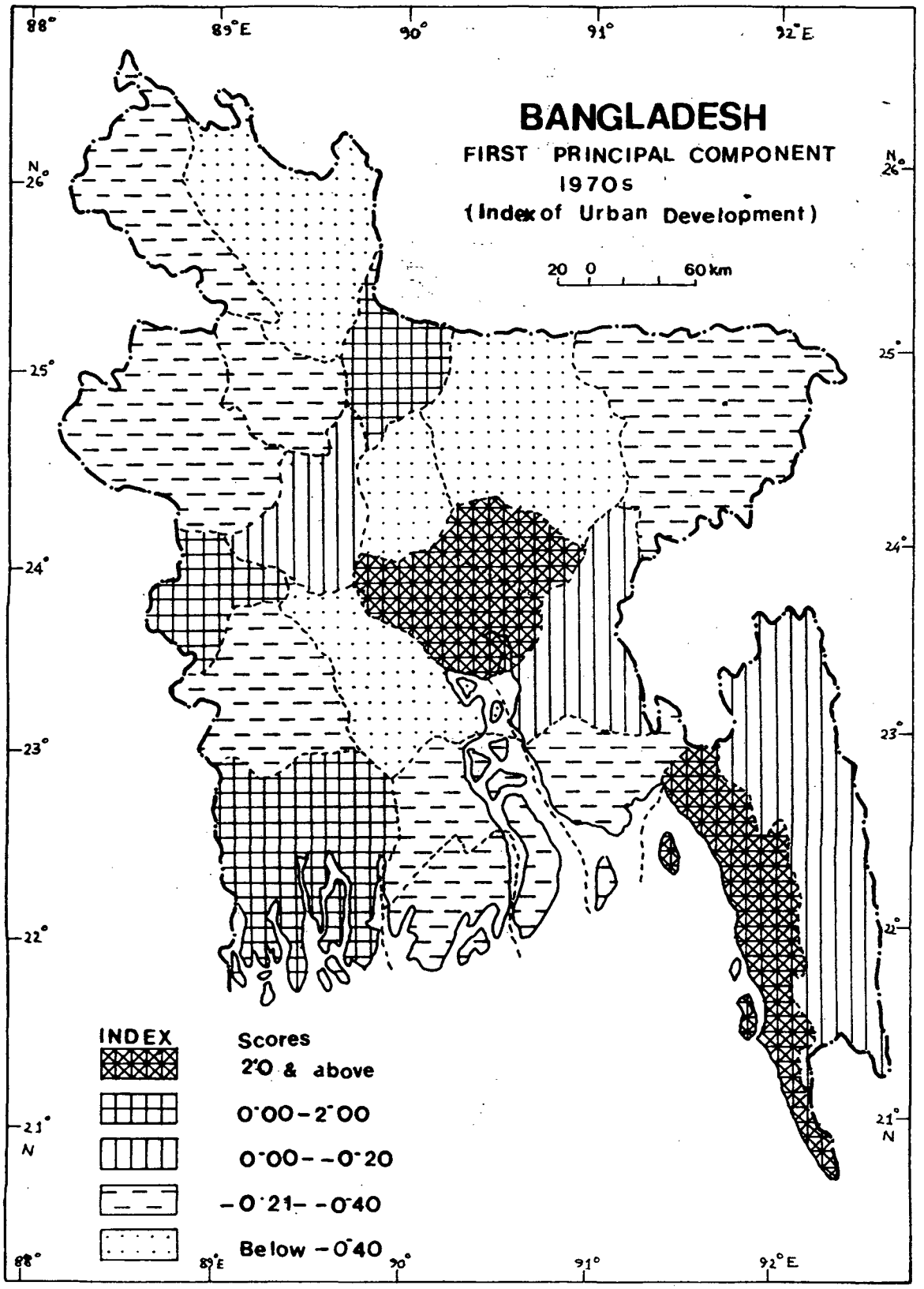
For working out the scores of first, second, third and fourth principal components the twenty indices of each of the five eigen vectors are used as weights of the standarised values of the selected 20 variables in the data matrix. Thus, we can see from Table-4.3, the factor scores of each principal component for the regions as weighted values, which indicate the levels of economic development in Bangladesh.

The significant economic characteristics of individual principal component are discussed below.

a. **Principal Component - 1:**

The first dimension of the component analysis accounted for 37.7 per cent of the total variance (Table 4.1) and is considered the most important single dimension of variation in economic development pattern in Bangladesh. Although all the variables are associated with the aspects of economic development, the varimox rotation of the axis emphasizes the basic cluster of relationships and extracts the first component of economic development in the few dominant variables among the 16 variables (Table 4.2). This first component is highly associated with the variables, such as, percentage of urban population (X5), number of urban centres (X6), urban industrial concentration (X7), GDP from industrial sectors (X11), number of telephones per lakh population (X17) and secondly, secondary school students (X20). The pattern of loadings show a clear factor scale loading heavily and positively on aspects of economic development related to urban development in Bangladesh. In contrast, the negative loading picked up are linked with GDP from agricultural sectors(X10).

From Table 4.3, the component scores of the 20 major regions in Bangladesh are plotted in Map-4.1. Highest level of component scores are linked with two regions namely Dhaka



Map - 4.1 : Based on Table - 4.4.

and Chittagong, which have the highest level of urban population and urban facilities. On the other hand, there are three other regions namely Khulna, Jamalpur, Kushtia which have positive scores and all the other regions have negative scores (Table 4.4). In contrast, regions with medium scores namely, Pabna, CHT, Comilla, have a medium type of urban development. While Sylhet, Jessore, Noakhali, Rajshahi, Dinajpur, Patnakhali, Bogra Barisal regions have the lower component scores which have a lower urban development and Tangail, Faridpur, Rangpur, Mymensingh have the lowest component scores which have evolved from non-urban settlements. The general level of urban development and the concentration of industrial activities corresponds with the spatial patterns of urbanization. The two relatively prosperous regions have highest percentage of urban population, on the other hand economically and industrially backward regions have experienced lesser urbanization. Based on the evidence and the pattern of loadings, the first component can be adequately termed as **"urban development"**. Thus, the above mentioned variables represent the significant contribution in relation to the pattern of economic development in Bangladesh.

b. **Principal Component-2**

The second component of the principal components analysis accounts for 26.9 percent of the total variance (Table-4.1) and in this components high positive loadings are associated with per capita GDP (X9), Per Capita Value

added from agriculture (X13), Percentage of total workers

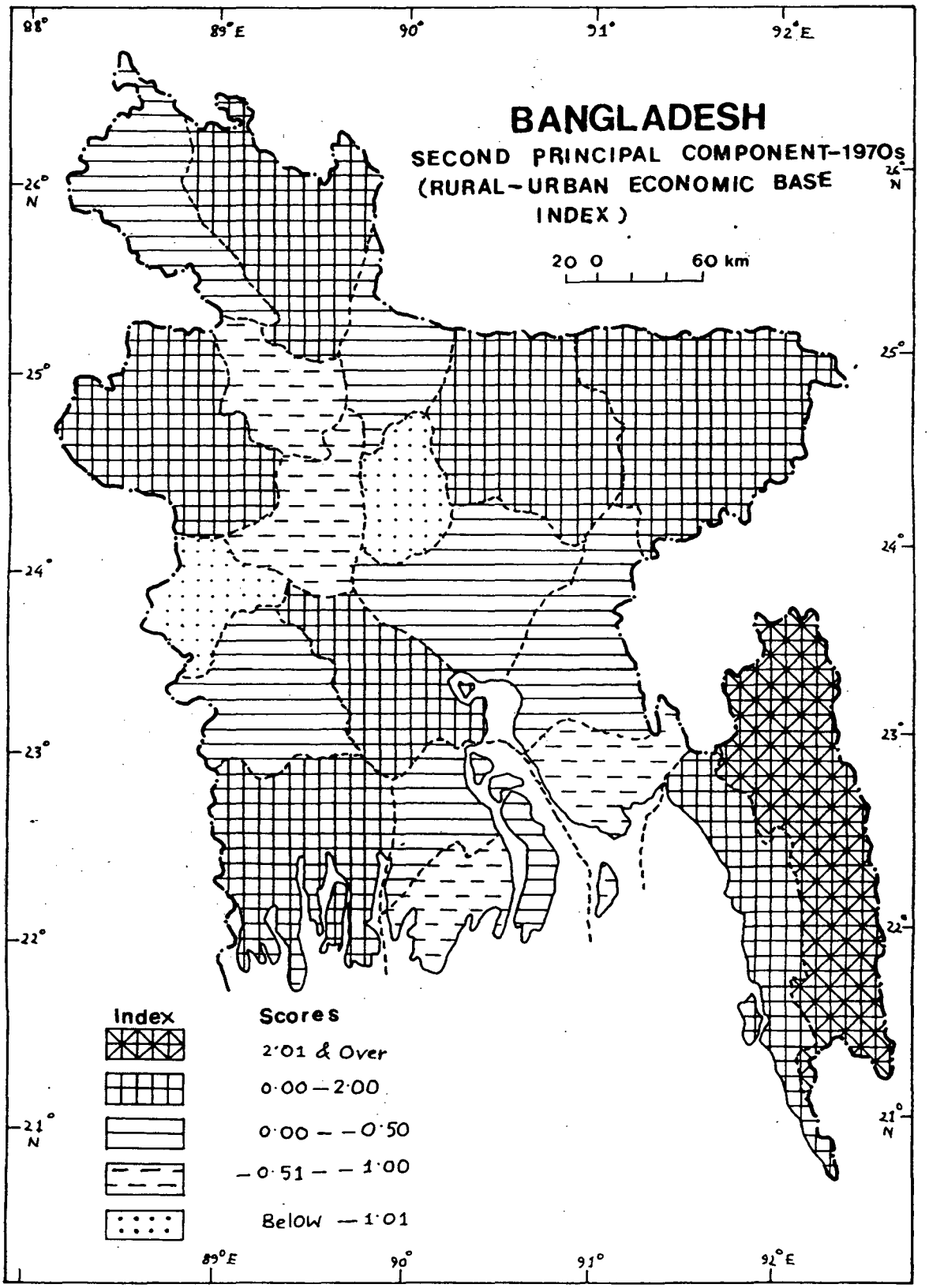
Table: 4.4
Levels of Economic Development (Factor 1) by Regions in Bangladesh (1970s)

Category	Score	Regions (Rank)
Very High (VH)	2.00 & above	Dhaka, Chittagong (1) (2)
High (H)	0.00 - 2.00	Khulna, Jamalpur, Kushtia (3) (4) (5)
Medium (M)	0.00 - -.20	Pabna, CHT, Comilla (6) (7) (8)
Low (L)	-.21 - - .40	Sylhet, Jessore, Noakhali (9) (10) (11) Rajshahi, Dinajpur, (12) (13) Patuakhali, Bogra, Barisal (14) (15) (16)
Very Low (VL)	Below -.40	Tangail, Faridpur, Rangpur, (17) (18) (19) Mymensingh (20)

Source: Based on Table - 4.3

(X_8). This component may be identified as capital formation or the income generating factor and negatively with GDP from service sectors (X_{12}). Thus this component reveals that the factors operating here are related to the agro-based rural economy and not to tertiary economy of the urban sectors.

Thus, factors associated with the production function in the rural economic sectors and generally related to agricultural production and other economic activities in rural areas are responsible for the rural development of the



Map - 4.2 : Based on Table - 4.5

regions. The component scores of the 20 regions are plotted in Map-4.2 from Table - 4.3.

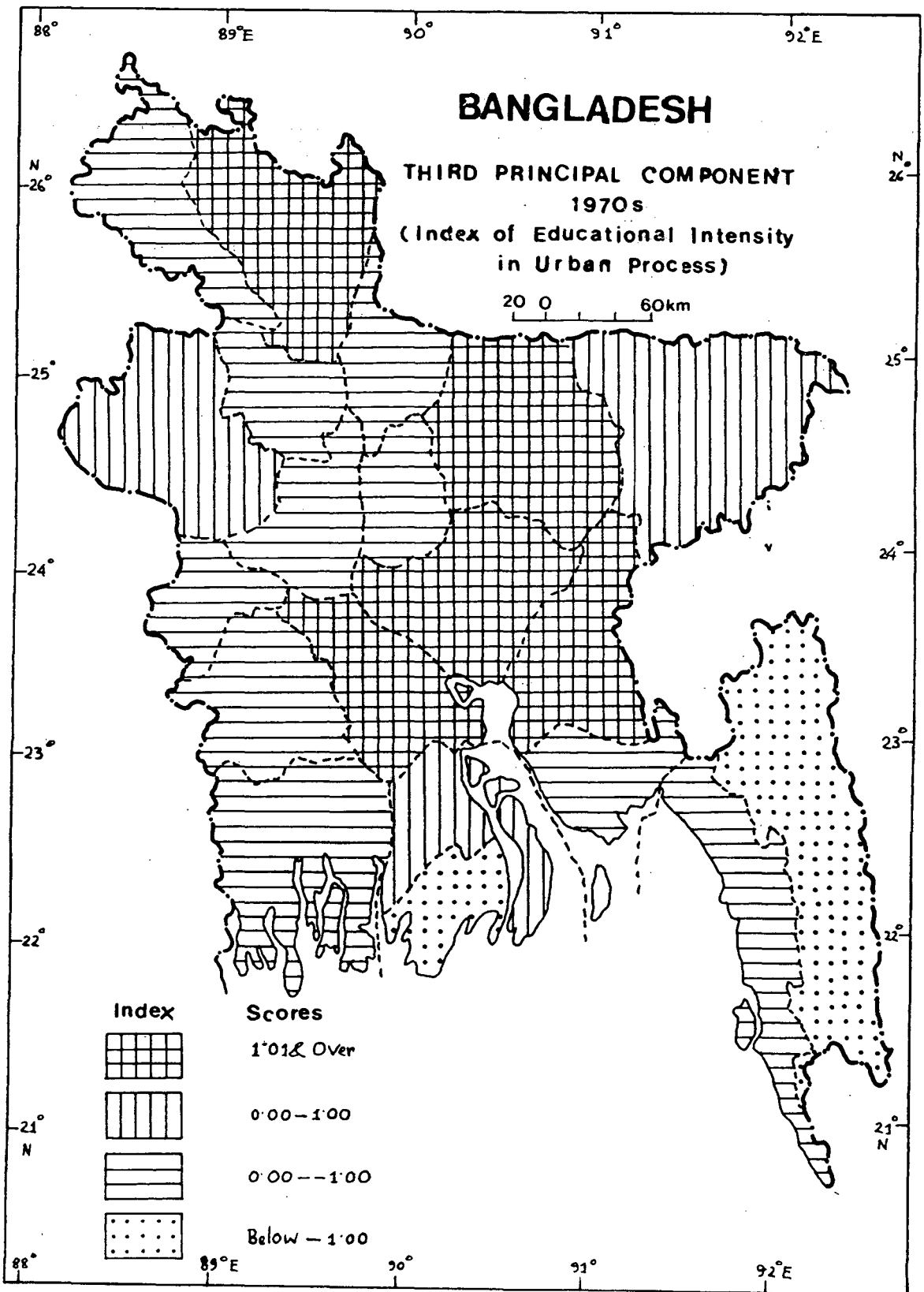
The overall pattern of component scores suggest a fair degree of unevenness in rural - urban economic base in the 20 regions. Chittagong Hill Tracts region show highest, while Kushtia and Tangail regions have lowest scores arising from variables related especially to rural economic sectors (Table - 4.5).

Table: 4.5
Levels of Economic Development (Factor-2)
by Regions in Bangladesh (1970s)

Category	Score	Regions (Rank)
Very High (VH)	2.01 & Over	Chittagong Hill Tract (CHT (1)
High (H)	0.00 - 2.00	Khulna (2), Sylhet (3), Mymensingh (4), Rajshahi (5) Rangpur (6), Chittagong (7) Faridpur (8)
Medium (M)	0.00 - -0.50	Dinajpur(9), Jessore (10), Comilla (11), Dhaka (12), Barisal(13), Jamalpur (14)
Low (L)	-0.51 - -1.00	Patuakhali (15), Pabna (16) Noakhali (17), Bogra (18),
Very Low (VL)	Below - 1.01	Khustia (19), Tangail (20)

Source: Based on Table 4.3

Considering higher loadings on the various economic development indicators especially pertaining to rural work force and also to agricultural production. This factor related to the rural based urban economy can be termed "**rural-urban economic base index.**



Map - 4.3 : Based on Table - 4.6

c.Principal Component - 3:

The third component accounts for 11.9 per cent of the total variance (Table-4.1) after 64.6 per cent has been accounted for by the first two components. Differentiation in loading patterns in the varimox rotated matrix indicate high loadings on post offices per 1000 population (X18), secondary school students (X_{20}) and secondly total urban population (X_5), total urban centres (X_6). The pattern of loadings show a clear factor scale loading positively on aspects of economic development. This component also indicates the general level of economic development and concentration of urban population of urban areas corresponds with the spatial patterns of urbanisation. Thus, this component [1] reveals that urban concentration is primarily based on education. This component indicates the educational intensity in the urban process.

Table: 4.6

Levels of Economic Development (Factor-3) in Bangladesh by Regions, 1970s

Category	Score	Regions (Rank)
Very High (VH)	1.01 and over	Dhaka (1), MymenSingh (2) Rangpur (3) Faridpur (4) Comilla (5)
High (H)	0.0-1.00	Sylhet (6), Rajashahi (7), Barisal (8)
Medium (M)	0.0 - - 1.00	Jessore (9), Tangail (10), Pabna (11), Noakhali (12), Khulna (13), Dinajpur (14) Bogra (15), Jamalpur (16), Kushtia (17), Chittagong (18),
Low (L)	Below-1.01	Patuakhali (19), CHT (20)

Source ; Based on Table 4.3

From Map: 4.3. it can be seen that the highest scores are in the five regions namely Dhaka, Mymensingh, Rangpur, Faridpur and Comilla and the lowest in the two regions namely Patuakhali and CHT regions (Table - 4.6).

d. **Principal Component - 4:**

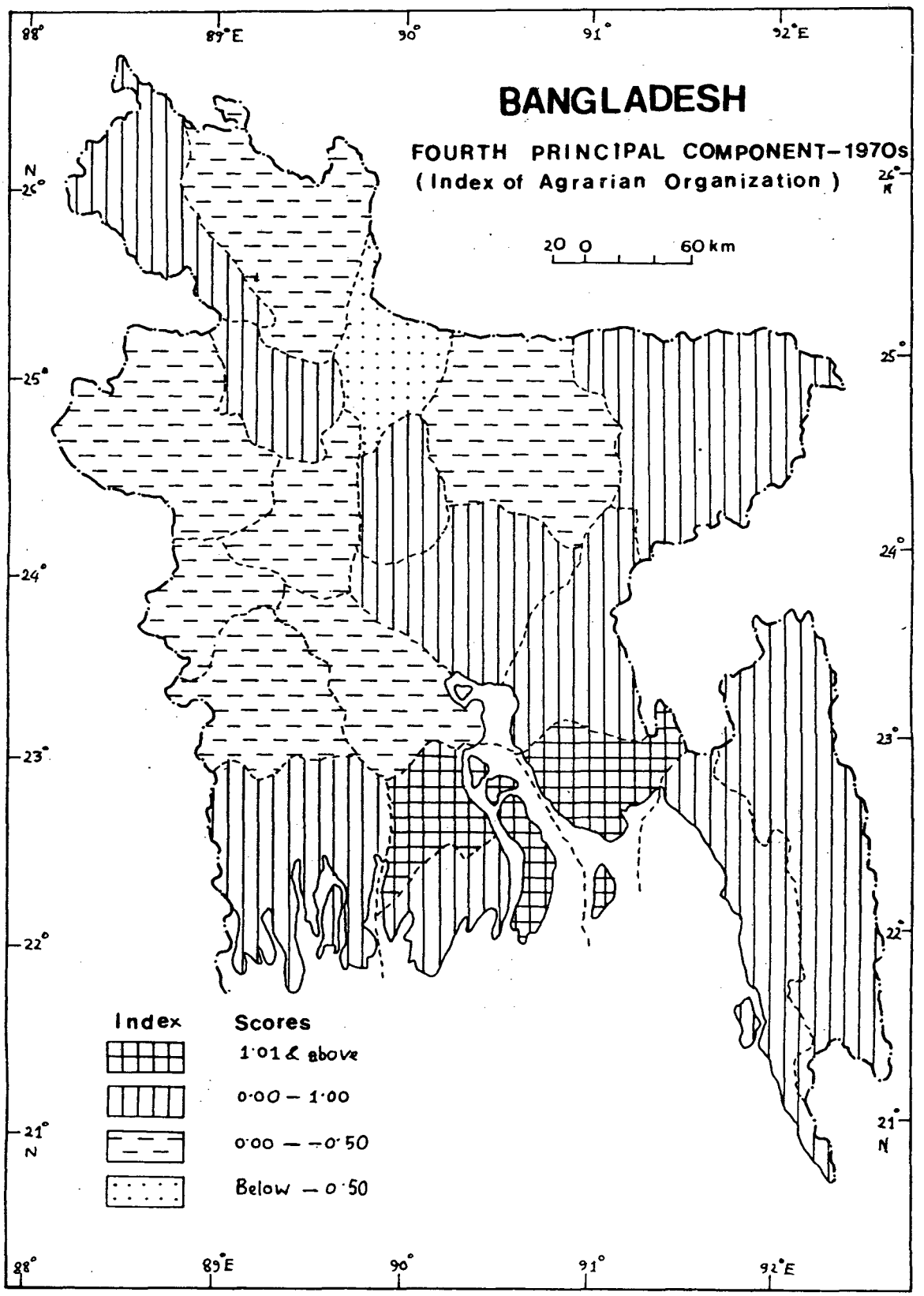
The fourth component accounts for 8.9 per cent of the total variation (Table-4.1). Extraction of more specific elements by varimox rotation in the principal components analysis indicates highest positive loadings on total workers (X8), per capita value added from agricultural sectors (X13), intensity of cropping (X14), daily wage of agricultural labour (X15), and adult literacy (X19) (See

Table: 4.7

Levels of Economic Development (Factor - 4) in Bangladesh by Regions, (1970's)

Categories	Score	Regions (Rank)
Very High (VH)	1.01 and above	Barisal (1), Noakhali (2),
High (H)	0.00-1.00	Patuakhali (3) Chittagong (4), Bogra (5), Comilla (6), Dinajpur (7), CHT(8), Tangail (9), Sylhet (10), Dhaka (11), Kulna (12)
Medium (M)	0.00 - - 0.50	Jessore (13), Pabna (14), Kushtia(15), Faridpur(16), Rangpur(17), Rajshahi(18), Mymensingh(19)
Low (L)	Below-0.50	Jamalpur

Source : Based on Table 4.3.



Map - 4.4 : Based on Table - 4.7

(Table - 4.7) Table - 4.2). These variables refer to the general socio-economic and agrarian economy present in Bangladesh. This component indicates an "**agrarian organisation**". The spatial pattern of this component as identified by the scores are shown in Map 4.4. The highest scores are identified for two regions namely Barisal and Noakhali regions. The scores for other regions are in the medium and High level category

4.3.2. PCA Explaining the Levels of Economic Development for the Period 1980s.

In this section of the present study we have followed the same procedure as in section 4.3.1. for the Principal Component Analysis (PCA) explaining the levels of economic development in the composite score for the period 1980s. We have also selected same variables with same numbers (X1.....X20) which were used in the previous section (Section-4.3.1) of this Chapter. The data of these new variables for the 1980s is given in Appendix - 4.2a and 4.2b. The matrix of inter correlations, 'R' among them is worked out through computer[32] from the given Table - 5.7, Chapter V. Four major factors yielding controlling variables for measuring the economic development pattern in Bangladesh have been worked out (Table 4.8). The four factors identified the variables (Table - 4.9) which have a dominant influence in explaining in economic development

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32. Op.Cit. (for 1980s) in 30.

pattern in Bangladesh. Therefore, the above mentioned selected sixteen (16) variables (excluding X1, X2, X3 and X4 variables) were then subjected to a principal axes solution deriving component scores (Table - 4.10), which can be used as composite indices for measuring the economic development patterns in Bangladesh.

The above Four factors (X1.....X20) registered high communalities (except X_{20} variable)in almost all of the four major factors. The rotated factor loadings on four factors are presented in Table - 4.9. In this table, the column communality indicates that almost all of the sixteen variables among twenty for this study are fully represented, so that the extent to which the components account for

Table :4.8

Levels of Economic Development by Percentage of Total Variance[33] explained by Each Factor (1980's)

Factor	Eigen Value	%age of Variance	Cumulative %age of Variance
1	6.94148	34.7	34.7
2	5.34476	26.7	61.4
3	2.49413	12.5	73.9
4	1.52154	7.6	81.5

differences between the variables varied insignificantly

33. Op.Cit. in 31.

between the regions. In contrast, it is also observed that the variables which are summarised by the four factors are fairly sufficient to explain the desirable features of the levels of economic development in Bangladesh for the period 1980s.

From Table 4.8 the first four factors according to the eigen values account for 81.5 per cent of the total variance from the variables listed. The eigen vectors corresponding to the four eigen values normalised to unity are given in Table - 4.9. It should be noted that we are not considering the fourth factor which is less important to explain the pattern of development.

To find out the scores of first, second, third and fourth principal components the twenty (20) indices of each of the four eigen vectors are used as weights of the standardised values of the selected 20 variables in the data matrix (Appendix - 4.4). Therefore, we can see from Table 4.10, the factor scores of each principal component for the regions as weighted values which indicate the regional patterns of economic development in Bangladesh. The resultant significant economic characteristics of each principal component are discussed in the following sections.

a. Principal Component - 1:

The first factor accounts for 34.7 per cent of the important single dimension of variation in economic develop-

ment pattern in Bangladesh. This factor is highly correlated with the variables, such as percentage of urban popula

Table: 4.9

Levels of Economic Development by Rotated Factor Matrix of Variables on Four Factors (1980's)

Variable	Communality	Factors			
		1	2	3	4
X1	.90732	.18131	.48055	.14115	.78968
X2	.52385	-.13188	-.11953	.69488	.09648
X3	.93614	.76439	-.38443	-.14551	.42765
X4	.89982	.62624	-.56298	-.34050	-.27340
X5	.95291	.97540	.00518	-.03732	.00970
X6	.86712	.77942	-.10801	-.03267	.49688
X7	.83662	.84848	.31223	.10920	-.08536
X8	.76534	-.01103	.63251	-.54998	.25032
X9	.96189	.04532	.97628	-.03492	.07415
X10	.91275	-.90844	.25019	-.01650	.15691
X11	.88108	.92829	.11109	-.01408	-.08258
X12	.89853	-.01565	-.93163	.09768	-.14427
X13	.95348	-.25013	.93879	-.01779	.09631
X14	.65563	-.11967	-.24628	-.75885	-.06922
X15	.71829	.67331	.50646	.02680	-.08784
X16	.83793	.36639	.83716	-.03731	-.03814
X17	.92330	.93998	.15467	-.03888	-.11960
X18	.72823	-.29922	-.31848	.70683	-.19407
X19	.71266	.43854	-.02820	.62812	-.35358
X20	.42902	.27727	-.07006	.14065	-.57223

Notes: Selected Variables X5 to X20 (16 Variables).

tion (X5), percentage of urban centres (X6), urban industrial concentration (X7), GDP from industrial sectors(X11), daily wage of agricultural labour (X15), telephones per lakh population (X17) and negatively linked with GDP from agricultural sectors (X10), which we have seen in the similar case of the 1970s. Thus, the pattern of loadings shows a clear factor scale loading heavily and positively on aspects of economic development related to urban factors in economic development of Bangladesh and also reveals agriculture as one of the factors which has negative influence on urban development.

To find the regional pattern in Bangladesh we have seen from Table - 4.10, the component scores of the 20 regions plotted in Map-4.5. The highest level of component scores are linked with only one (i.e. Dhaka) region, which have the highest level of urban population and urban amenities. There are another four regions which have positive scores (Table-4.11) in this factor (namely Chittagong, Comilla, Barisal and Khulna regions). On the other hand, the medium scores have another four regions namely Noakhali, Sylhet, Rajshahi and Rangpur, which have the negative scores among those variables. While another four regions have also the negative scores with low level category (i.e. Mymensingh, Jessore, Kushtia and Pabna regions). These four categories (VH, H, M, L) have followed the urban based economy.

Table : 4.10

Levels of Economic Development by Scores of Principal Components in Regional Levels, 1980's

Regions	Factor Score (Rank)			
	F1	F2	F3	F4
1.Chittagong	1.70573(2)	.50859(2)	- .21323 (11)	- .25419
2. CHT	-.55626(15)	4.03194(1)	- .18480(10)	.24914
3. Comilla	.34735 (4)	- .74020(20)	- .35124(14)	.01521
4. Noakhali	-.00771(6)	- .50373(17)	.38296(5)	- .72474
5. Sylhet	-.14378(8)	- .10768(7)	.20920(6)	1.97358
6. Dhaka	3.49827(1)	.09271(5)	- .26962(13)	-.52591
7. Faridpur	-.42997(14)	- .47423(15)	- .13169(9)	.38198
8. Jamalpur	-.80813(20)	- .39827(14)	-1.23185(20)	- .78606
9. Mymen-singh	-.22884(10)	- .62256(19)	- .78554(17)	1.91502
10.Tangail	-.62287(16)	.10528(4)	-1.15477(19)	-1.68422
11. Barisal	.09419(5)	- .60699(18)	1.37503(3)	- .10522
12. Jessore	-.32022(12)	- .25726(11)	.14846(7)	.12896
13. Khulna	.44735(3)	.32209(3)	1.57656(2)	.47162
14. Kushtia	-.34197(13)	- .19285(10)	- .09524(8)	- .77107
15. Patua-khali	-.76641(19)	- .15342(8)	2.88426(1)	- .79398
16. Bogra	-.74985(18)	- .30871(12)	- .71101(16)	- .94347
17. Dinajpur	-.67243(17)	- .5000(16)	- .23348(12)	.45170
18. Pabna	-.26377(11)	- .15520(9)	- .54201(15)	-1.25386
19. Rajshahi	-.15067(9)	- .10339(6)	.45224(4)	.79342
20. Rangpur	-.03001(7)	- .38613(13)	-1.12422(18)	1.46207

Thus, the general level of urban process and the form of concentration pattern of industrial growth corresponds with the spatial patterns of urbanisation. There are three relatively prosperous regions which have highest percentage of urban population for economic opportunity in urban industrial and the service sectors namely Dhaka, Chittagong and Khulna regions. In contrast, economically and

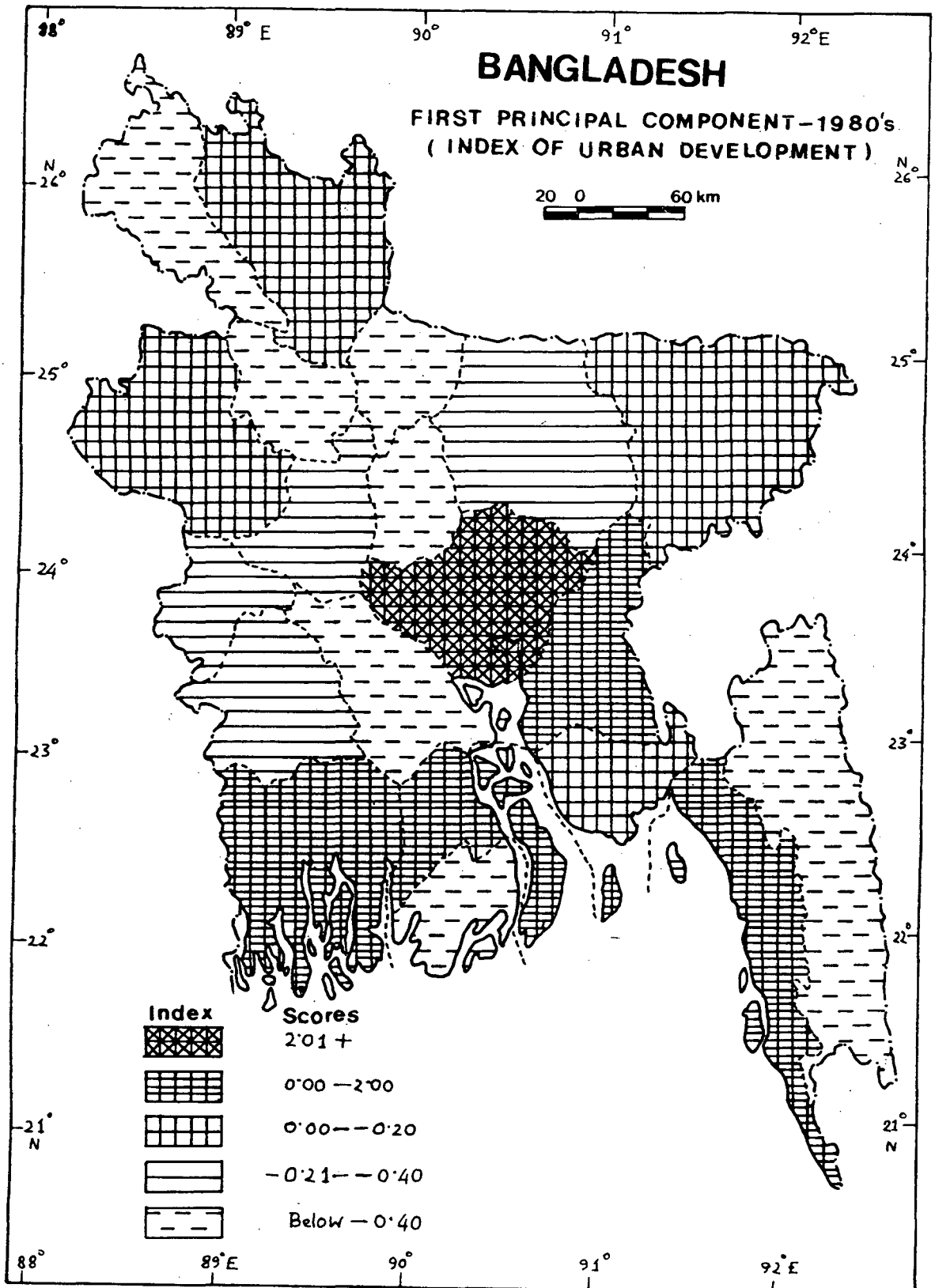
Table: 4.11

Levels of Economic Development (Factor-1) in Bangladesh by Regions (1980's)

Category	Score	Regions (Rank)
Very High (VH)	2.01 +	Dhaka (1)
High (H)	0.00 - 2.00	Chitagong (2),Khulna(3), Comilla(4),Banisal (5),
Medium(M)	0.00 - - 0.20	Noakhali(6), Rangpur(7), Sylhet(8),Rajshahi(9),
Low (L)	-0.21 - - 0.40	Mymensingh(10), Pabna(11), Jessore(12),Kushtia(13),
Very Low (VL)	Below - 0.40	Faridpur(14),CHT(15), Tangail(16),Dinajpur(17) Bogra(18),Patuakhali(19), Jamalpur(20)

Source: Based on Table - 4.10

industrially backward regions have experienced lesser urbanisation. These above variables from the first component score represent the significant contribution in relation to the level of economic development in Bangladesh. According to the variable loadings this first component can be identified as urban biased economy or **"urban development index"** (Map 4.5)

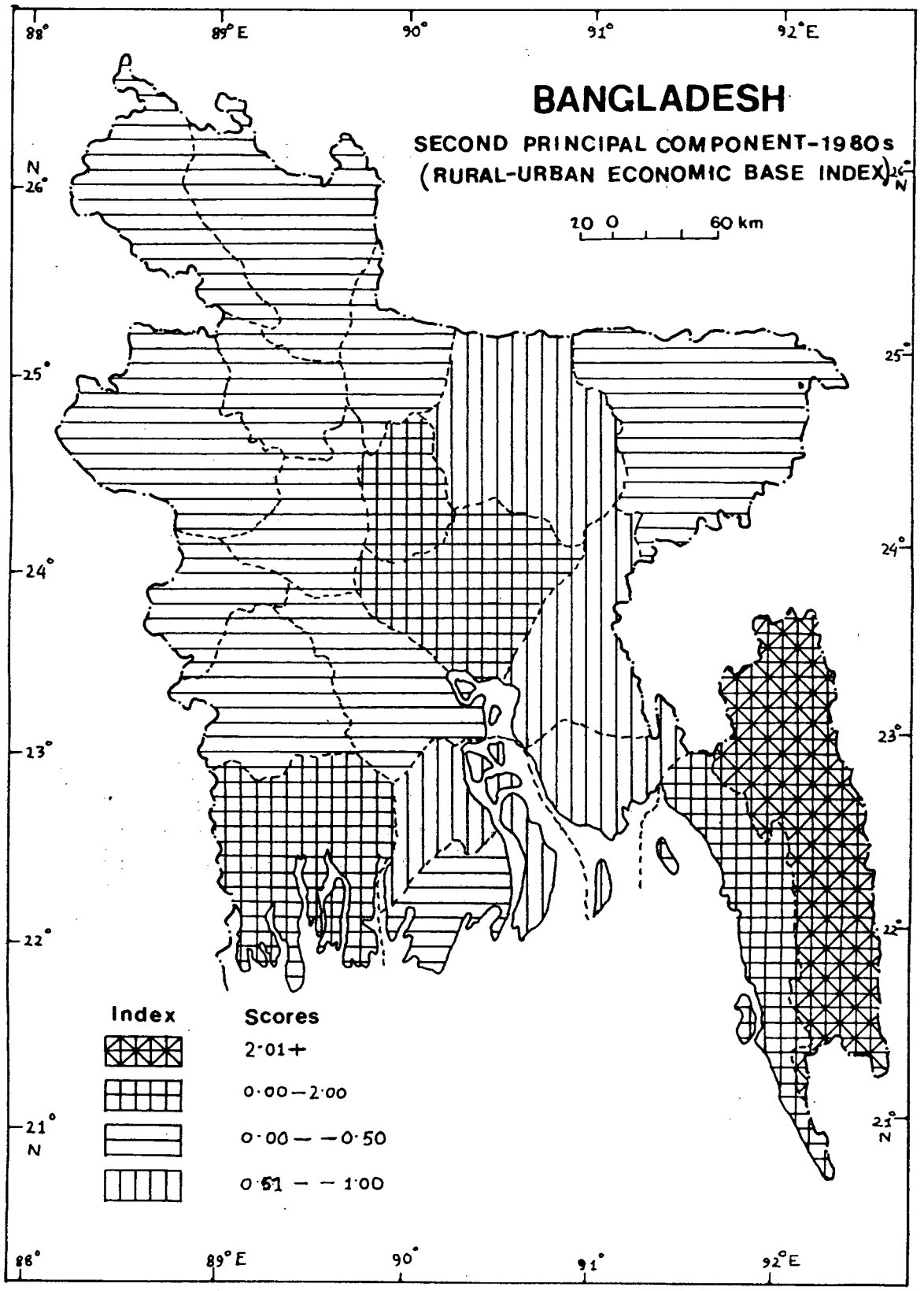


Map-4.5 : Based on Table-4.11

b. **Principal Component - 2:**

The high loadings of the second principal component are associated with working population (X8), per capita GDP (X9), per capita value added from agriculture (X13), daily wage of agricultural labour (X15), Hospital bed per lakh population (X16) and negatively associated with GDP from service sectors (X12). This component also has the similar pattern as like the 1970s score. Thus, this component may be identified as capital formation or income generating factor and the income generated from the agriculture and the service sectors. Thus, there is also a relationship between the agricultural sectors and with the service sectors. Therefore, this factor indicates that development is also related to the primary sectors of economy and with the service economy (rural based agricultural economy transformed into an urban based service or tertiary sectors economy), which in terms of **"rural-urban economic base index"**, This factor explains 26.7 per cent of total variance (Table-4.8) with positive loadings.

The component scores of the 20 regions are plotted in Map-4.6 from the given Table - 4.10. The overall pattern of component scores suggests a fair degree of unevenness in rural urban economic base in these regions. The figure shows that CHT is the highest score in this component and



Map - 4.6 : Based on Table - 4.12

Chittagong, Khulna, Dhaka, Tangail have the positive scores with high relationship between the scores. Most of the regions are in the medium category in their levels of economic development in Bangladesh. Comilla, Noakhali, Mymensingh, Barisal have the lowest category of this component scores (Table-4.12).

Table: 4.12.

Levels of Economic Development (Factor-2) in Bangladesh by Regions (1980's)

Category	Score	Regions (Rank)
Very High (VH)	2.01 +	CHT (1)
High (H)	0.00 - - 2.00	Chitagong(2), Khulna(3) Dhaka(5), Tangail(4)
Medium(M)	0.00 - - 0.50	Rajashahi(6), Sylhet(7) Patuakhali(8), Pabna(9), Kushtia(10), Jessore(11), Bogra(12), Rangpur(13), Jamalpur(14), Faridpur(15), Dinajpur(16)
Low (L)	- 0.51 - - 1.00	Comilla(20), Noakhali(17) Mymensingh(19), Barisal(18)
Very Low (VL)		

Source: Based on Table 4.10

Thus, the rural-urban relationship is the most essential factor for this component and also which is more related to the economic interaction for the well-being of the society.

c. **Principal Component - 3:**

The third component accounts for a further 12.5 per cent of the original variance (Table-4.8). The structure of

loadings obtained by varimox rotation columns has the highest positive loadings on post offices per 1000 population (X18), adult literacy rate (X19) and negatively associated with working population (X8) and intensity of cropping (X14). The pattern of loadings shows a clear factor scale on aspects of social facilities in the region. This explains the interaction of institutional services with economic development. Thus, this component may be indicated as the "**index of Service Sectors Development**".

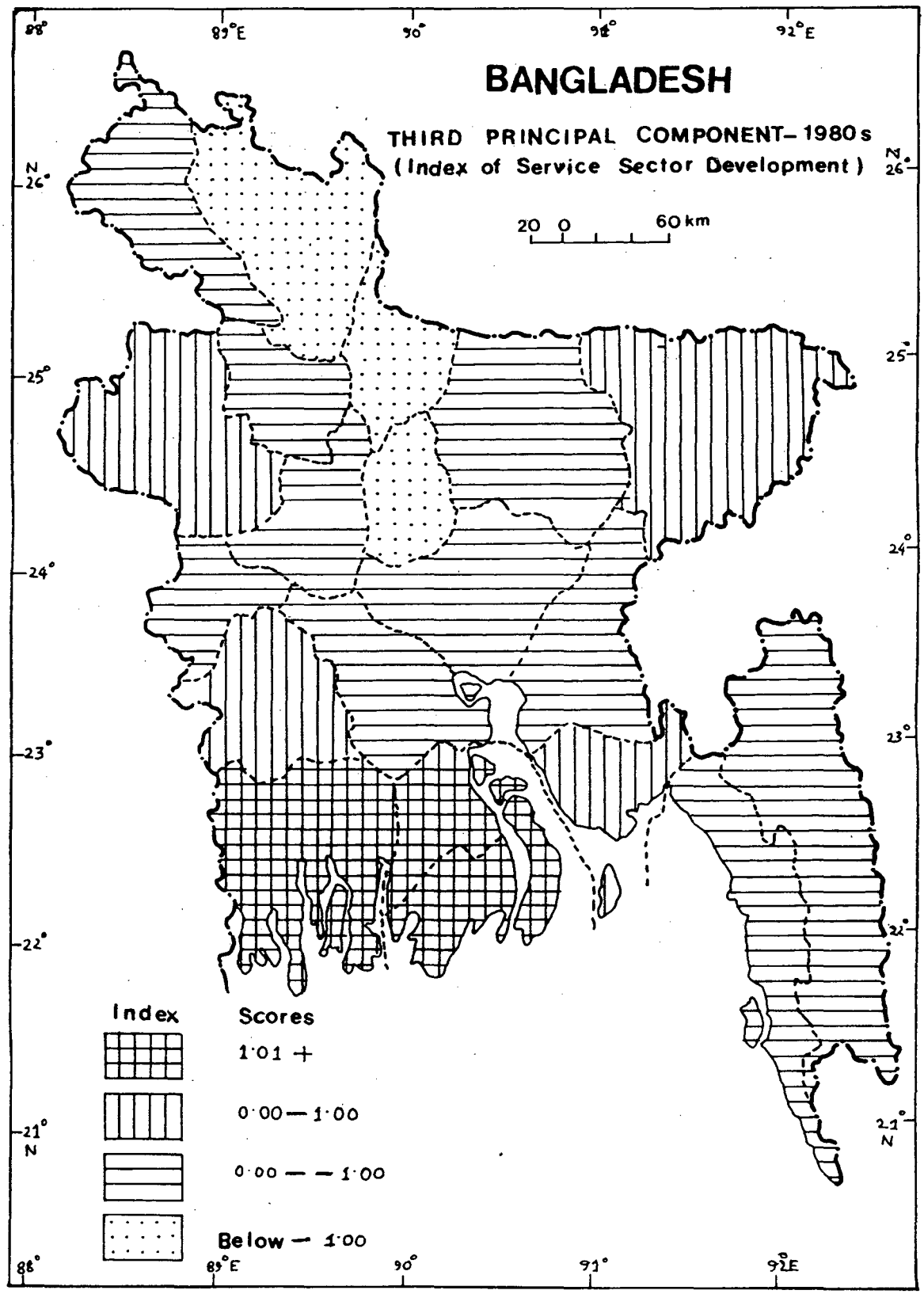
Looking at the spatial pattern of component scores (Map-4.7) it can be seen that highest component scores with attendant level of service sectors comprises the regions of Barisal, Khulna and Patuakhali, Noakhali, Sylhet, Jessore and Rajshahi are other regions which recorded higher scores.

Table: 4.13

Levels of Economic Development (Factor-3) in Bangladesh by Regions for 1980's.

Category	Score	Regions (Rank)
Very High (VH)	1.01 +	Barisal(3), Khulna(2), Patuakhali(1).
High (H)	0.0 - 1.00	Noakhali(5), Sylhet(6), Jessore(7), Rajshahi(4)
Medium(M)	0.0 - - 1.00	Chittagong(11), CHT(10), Comilla(14), Dhaka(13), Faridpur(9), Mymensingh(17), Kushtia(8), Bogra(16), Dinajpur(12), Pabna(15)
Low (L)	Below - 1.00	Jamalpur(20) Tangail(19), Rangpur(18)

Source : Based on Table 4.10.



Map - 4.7 : Based on Table - 4.13

The general pattern of improved service sectors are in the regions of Jamalpur, Tangail and Rangpur. They recorded below average component scores and have less service sector development.

4.3.3. Comparative Analysis by PCA for the 1970s and 1980s:

The developmental efforts in the 1970s and the 1980s have led to significant change in the levels of economic development of the regions as reflected in the rank order variation between the 1970s and the 1980s. In this study we have seen that the changes have affected most of the regions which appear to either increase or decrease in their economic levels (Table 4.14). Only three major urban industrial regions namely Dhaka, Chittagong, Khulna have not changed and they are following their previous rank order. These three regions have the highest **level of development** (Map-4.8). In contrast, there are nine regions which have increased their level (namely Comilla, Sylhet, Noakhali, Rajshahi, Barisal, Tangail, Faridpur, Rangpur and Mymensingh regions). These nine regions are termed **Developing Level** (Map.4.8).

Lastly, there are another eight regions which have changed from the upper level to the lower level (namely Jamalpur, Kushtia, Pabna, CHT, Jessore, Dinajpur, Patuakhali and Bogra). These regions are termed **"Lower Level"** (Map.4.8)

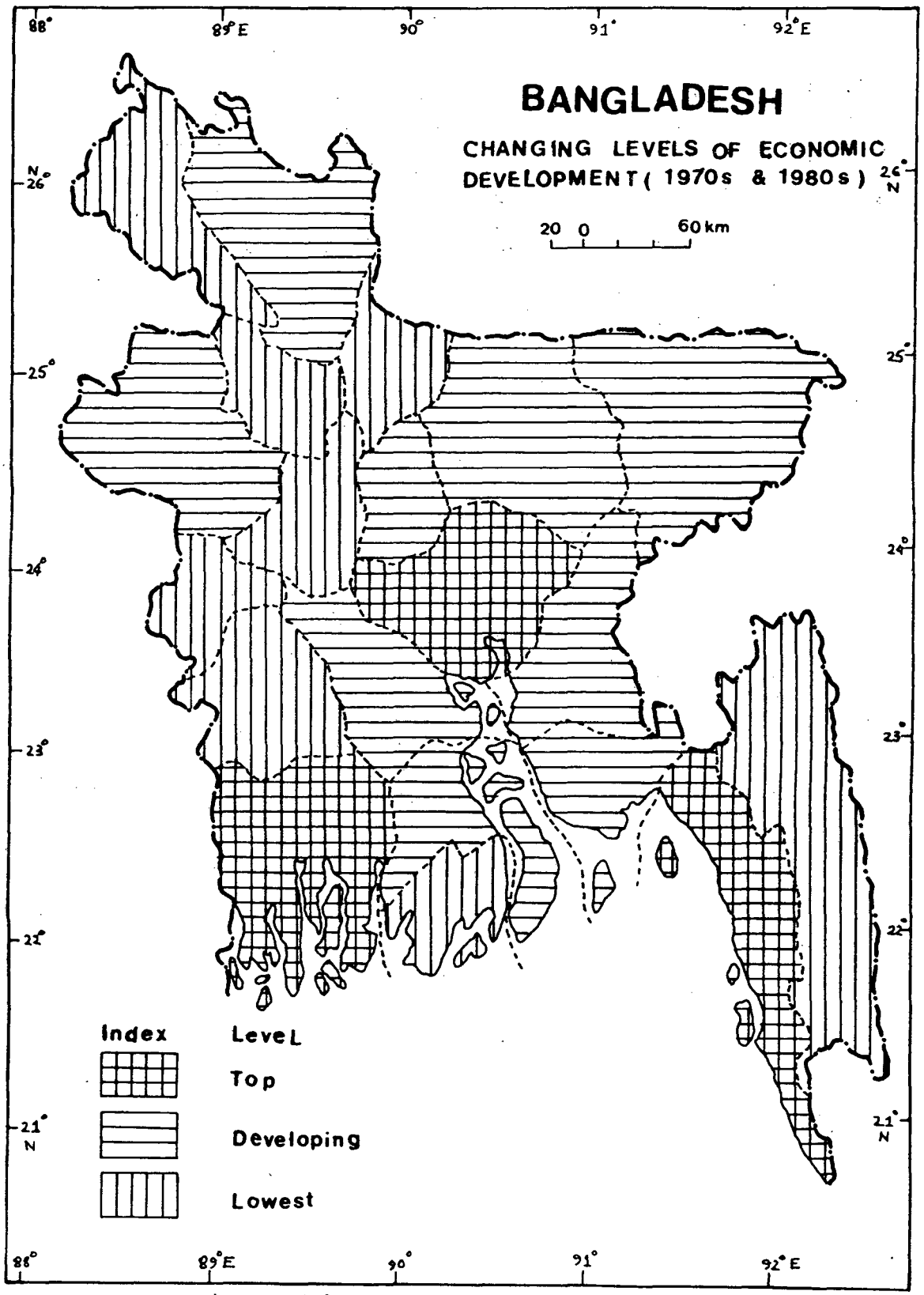
Table: 4.14

Changing Levels of Economic Development for the 1970's and between 1980s according to FPCA

Development Level Characeristics of Regions			
Equal Level(R)		Increasing Level(R)	Decreasing Level(R)
Dhaka	1	--	--
Chittagong	2	--	--
Khulna	3	--	--
--		--	Jamalpur (4 to 20)
--		--	Kushtia (5 to 13)
--		--	Pabna (6 to 11)
--		--	CHT (7 to 15)
--		Comilla (8 to 4)	--
--		Sylhet (9 to 8)	--
--		--	Jessore (10 to 12)
--		Noakhali (11 to 6)	--
--		Rajshahi (12 to 9)	
--		--	Dinajpur (13 to 17)
--		--	Patuakhali (14 to 19)
--			Bogra (15 to 18)
--		Barisal(16 to 5)	--
--		Tangail(17 to 16)	--
--		Faridpur (18 to 14)	--
--		Rangpur (19 to 7)	--
--		Mymensingh (20 to 10)	--
Top Level		Developing Level	Lowest Level

Notes : 1. 'R' is representing as rank of the towns.

2. FPCA, representing as First Principal Component Analysis.



Map - 4.8 : Based on Table - 4.14

4.4.0. Conclusions:

This section of the study is an attempt to delineate economic regions in terms of development levels so as to aid the formulation of the spatial basis for future pattern in economic development and this pattern should be change according to the regional development need in various economic aspects.

Bangladesh is an agro-based country and its development mainly depends on agro-economic characteristics. In every stage the development in regional settings are varying and the inter-regional as well as the intra-regional disparities have been established. The inter-regional disparity is higher in different sectors of the economy other than agriculture. The study also found that the large and bigger urban regions are developing at a higher rate and the small urban centres or the low-economy based regions at a lower rate. These types of development regions are not benefitting from the government initiative. It is also evident that recent economic development efforts with an urban bias and emphasis on urban industrialisation has precipitated the twin processes of concentration of urban population in a few selected urban areas (e.g. Dhaka, Chittagong and Khulna regions).

Thus from the above analysis it also becomes clear that the regional disparities or the inequality are prominent

with respect to major development aspects and are significant with regard to few urban and agricultural aspects. Similarly, while in the provision of major urban facilities (i.e. education, telephones, post offices etc.) regional disparities are apparent in the countries regional setting.

The general conclusions we derive about the explanatory powers of various selected development variables are:

1. Among the various (selected) indicators of economic development, the agricultural sector is the major factor for the development of the country as well as of the regions.
2. Economic development variables from the first principal component score represent the significant contribution and those components identify that all the sectoral development depends on the urban economy. This urban economy is also based on agricultural variables. Thus, agricultural development is the major factor for urban development as well as the overall development of the country.
3. Urban amenities or the facilities are also lower in the poor development regions (i.e. education, hospital, telephones, post offices etc.) Thus all the development is concentrated in the urban industrial regions.
4. It is also a positive side that rural urban linkages are strong because most of the urban centres are growing on the basis of agricultural economy.
5. The Service sectors is dominant in the urban areas of the country and in the rural areas there are vast inequalities.

Relationship between Economic Development and Urbanization in Bangladesh

CHAPTER - V

5.0.0. Relationship Between Economic Development and Urbanization in Bangladesh :

The regional variations in the levels of economic development and the disparities in urban development have already been identified in the previous chapters (chapter III and IV) of this study. The present chapter attempts to identify the different economic characteristics (selected) which are more influencial in the process of urbanization and their linkages.

Several studies suggest that increased urbanization appears to be an inevitable concomitant of economic development. The correlation is positive and universal enough to permit the assumption that high levels of economic development measured in terms of per capita incomes and levels of output and consumption, produce high urbanization ratios. Whether the corollary is equally valid i.e. urbanization produces economic development, is a question which generates considerable debate. A number of writers have pointed out that when compared to industrialized nations many underdeveloped and developing countries like Bangladesh have much higher urban ratios than their levels of economic development would seem to warrant.

A general relationship between urbanization and economic development has been often assumed, i.e. that the most highly urbanized countries are, ipso facto, the most

"developed", and the most economically advanced countries must be also the most urbanized ones. Looking back to Gordon's child's model of the emergence of cities or towns, of course, one can see that there is an implication that towns spell "development" nor economic and technological advancement. But although the relationship between "development" and in industrialisation, agricultural employment and capital formation has been studied by a numbers of eminent, economists, the relationship between 'urbanization' and 'development' has received comparatively little attention[1]. Therefore, urbanization is an important factor for the growth of economic development of a certain nation or the specific regions and there economic development also varied in respect of time and space variations.

According to Chadwick[2] urbanization creates the myriad relationship of the network of complex interactions, which are the basis of economic development, not with standing those migratory factors i.e. employment, over-crowding, pollution, crime etc., which also seem to characterize in large cities. Thus, large cities economic opportunity is relatively higher than the small and medium size urban centres and also the process of urbanization is higher than those of small and medium urban centres.

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1. See details, Chadwick (1987), "Models of Urban and Regional Systems in Developing Countries" - Some Theories and their Applications in Physical Planning, P. 32.

2. Ibid, p. 2.

The rank-order of the regions by above economic variables perfectly correlates with the rank order of the regions by level of urbanization in suggesting that the economic development of the regions bears a close relationship to urbanizationOn level. Those data do not permit conclusions regarding cause and effect relationships. They do however, suggest that among the regions as among the countries of the world[3], level of urbanization is closely interrelated with level of economic development. Efforts to raise the economic levels of the less developed regions must, therefore, consider the possible role, which programmes designed to stimulate urban growth in the regions can have in achieving such goals[4]. But we know that all regions do not have similar economic characteristics and they differ from to region as well as from country to country. It is also important to note here that some economic variables are most influential and some variables are less influential and influence the growth of urban centres to lower order or to higher orders.

In Bangladesh, the national pattern of urbanization has an identifiable relationship with regional or spatial

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3. See, United Nations (1968), "Urbanization and Economic and Social Change: An Explanatory Demographic Investigation, International Social Development Review, P. 1, 21-35.

4. Cited in Rafiqul Huda Chowdhury (1980), "Urbanization in Bangladesh" Centre for Urban Studies, Development of Geography, University of Dhaka, P. 31-32.

economic development. Regional variations in the level of development are linked to regional differences in urbanization.

The present section of the study analyses the relationship between levels of economic development and the levels of urbanization in Bangladesh. This study also finds the relationship between change in the levels of economic development and the change in urbanization for 1970s and 1980s.

In attempting to document and analyse the relationship between economic development and urbanization, we have found out:

(i) The relationship between levels of economic development and levels of urbanization measured by "Ranking" method on the basis of **Principal Component Score (FPC-Score[5])** for levels of economic development and **Percentage of total urban population** for levels of urbanization. The analysis also have been made for the two periods of time i.e. the 1970s and 1980s separately.

(ii) The significant economic variables (selected) which are the more influential for improving the urban growth or urbanization and these relationships are measured by **Correlation** and **Stepwise Multiple Regression Analysis.**

5.FPC - First Principal Component.

The levels of economic development were obtained (in **Chapter IV, Section-4.3.0** Table -4.3 & 4.10) by summing the scores by FPC (F_1) of 20 variables (X_1, X_2.....X_{20}) which show the levels of economic development. On the other hand, the levels of urbanization were measured (**in Chapter III, Section 3.4.1.1., Table-3.16)** by taking the percentage of urban to total population.

We shall now attempt to find out:

(i) the relationship between urbanization and economic development by region; and

(ii) the relationship between the variables related to urbanization and economic development.

5.1.0 Relationship Between Levels of Economic Development and Levels of Urbanization by Ranking Method:

In order to show the nature of association between the levels of economic development and the levels of urbanization in 1970s and 1980s the following formula has been used to estimate the degree of relationship between them. Spearman rank correlation is a suitable measure of the relationship between two sets of variables using the rank data. For a rank correlation the data may be collected either in ranked form or actual quantitative values may be converted into the ranked form. The index of rank correla-

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* First Principal Component

Table : 5.1

Calculation of Spearman's Rank Correlation Coefficient for the level of Economic Development (X) in the 1970's and the levels of Urbanization (Y) 1974 by Regions

Regions	X	R_x	Y	R_y	$d_i=R_x-R_y$	d_i^2
1.Chittagong	2.03675	2	14.58	2	0	0
2. CHT	- .15366	7	0.79	19	-12	144
3. Comilla	- .18941	8	3.77	6.5	1.5	2.25
4. Noakhali	- .30444	11	1.06	18	- 7	49
5. Sylhet	- .20527	9	2.01	12	- 3	9
6. Dhaka	+3.30138	1	37.06	1	0	0
7. Faridpur	- .69355	18	1.78	13	5	25
8. Jamalpur	+ .08200	4	1.61	16	-12	144
9. Mymensingh	- .91342	20	4.84	4	16	256
10.Tangail	- .53674	17	1.66	15	2	4
11. Barisal	- .39803	16	2.35	11	5	25
12. Jessore	- .28116	10	2.75	9	1	1
13. Khulna	+ .73510	3	8.74	3	0	0
14. Kushtia	+ .05670	5	2.39	10	- 5	25
15. Patuakhali	.39076	14	0.57	20	- 6	36
16. Bogra	- .39135	15	1.26	17	- 2	4
17. Dinajpur	- .38872	13	1.73	14	1	1
18. Pabna	- .12279	6	3.27	8	- 2	4
19. Rajshahi	- .37344	12	3.77	6.5	5.5	30.25
20. Rangpur	- .86921	19	4.00	5	14	196

$\sum d_i^2 = 955.5$

Thus, $\rho = 1 - \frac{6\sum di^2}{n^3 - n} = 1 - \frac{955.52}{20^3-20} = 0.88$

tion rho ( ) is given as below[6] :

$$\text{rho}(\rho) = 1 - \frac{6 \sum di^2}{n^3 - n}$$

where, 'n' is the total number of observations and 'di' is the difference in the ranks of the two sets of variables in the ith observation.

For calculation 'ρ' (rho) with the help of this formula, the regions of the area under study were ranked for the levels of economic development (FPC-Score, denoted as 'X') in 1970s & 1980's and ranked for the level sof urbanization (denoted as 'Y') in 1974 & 1981. di^2 was obtained by summing up the squared deviations of the two ranks (R_X and R_Y).

The results show that there exists a positive relationship between the levels of economic development and the levels of urbanization in the 20 major regional urban centres. However, without applying the test of significance, we cannot generalize this positive relationship for all the urban centres in the region, as the number of observations in the present case is large. The significance of the value of 'ρ' (0.88) has been tested with the help of the following formula, which is suitable for large samples

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6. For details see, Aslam Mahmood (1977), "Statistical Methods in Geographical Studies,", Rajesh Publications, New Delhi, PP. 53-55.

numbers (N is 20 or large)[7]

$$t = \rho\sqrt{\frac{N-2}{1-\rho^2}} = (0.88)\frac{18}{1-(.88)^2} = 7.86$$

with df = N - 2
= 20 - 2 = 18

The tabulated value of 't' for 18 (20-2) degrees of freedom (df) is 2.88 at 1%, 2.10 at 5% and 1.73 at 10% levels of significance respectively (Appendix-5.1). The computed value is greater than tabulated value of 't' hence, the correlation coefficient is quite insignificant, i.e. urban population correlation coefficient may be considered as zero.

Hence, we may conclude that there exists a positive correlation in the 20 major regional urban centres.

Table 5.2 brings out the comparison between the nature of the relationship between the levels of economic development in 1970s and the percentage of total urban population (levels of urbanization) in 1974. The table shows that there are three major regional towns namely Dhaka, Chittagong and Khulna with very high levels of economic development also very high levels of urbanization. Mymensingh and Rangpur regions have lower levels of economic development than the levels of urbanization. It means that these two regions have higher levels of urbanization but

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7. See in detail Sydney Siegel (1956), "Non-Parametric Statistics for the Behavioural Sciences, McGraw Hill Book Co. Inc., Kogakusha Co. Ltd., Tokyo, p. 212.

Table: 5.2

Comparative Picture of the Regions Classified on the basis of the Levels of Economic Development 1970's and the Percentage of Total Urban Population in the 1974.

Category	Levels of Economic Development		Levels of Urbanization	
Very High (VH)	Dhaka	(1)	Dhaka	(1)
	Chittagong	(2)	Chittagong	(2)
	Khulna	(3)	Khulna	(3)
High (H)	Jamalpur	(4)	Mymensingh	(4)
	Kushtia	(5)	Rangpur	(5)
	Pabna	(6)	Comilla	(6)
	CHT	(7)	Rajshahi	(7)
	Comilla	(8)	Pabna	(8)
	Sylhet	(9)	Jessore	(9)
	Jessore	(10)	Kushtia	(10)
Medium (M)	Noakhali	(11)	Barisal	(11)
	Rajshahi	(12)	Sylhet	(12)
	Dinajpur	(13)	Faridpur	(13)
	Patuakhali	(14)	Dinajpur	(14)
	Bogra	(15)	Tangail	(15)
Low (L)	Barisal	(16)	Jamalpur	(16)
	Tangail	(17)	Bogra	(17)
	Faridpur	(18)	Noakhali	(18)
	Rangpur	(19)	CHT	(19)
	Mymensingh	(20)	Patuakhali	(20)

Source : Based on Table - 5.1.their levels of economic development are very low. On the other hand, though Jamalpur, CHT has the higher levels of economic development, but their position in the levels of urbanization was the lowest. The regions of Barisal and Faridpur have higher percentage of urban population in comparison to their levels of economic development. In contrast, Noakhali, Patnakhali have higher levels of economic development in comparison to their levels of urbanization.

From the above discussion it is obvious that the percentage of total urban population do not have a strong relationship with the levels of economic development. The more developed regions in general have higher levels of urbanization, but less and even the least developed regions such as Rangpur, Mymensingh etc., also have higher share of total urban population or the levels of urbanization.

To find the 'ρ' with the help of above formula, for the levels of economic development in 1980s and the levels of urbanization in 1981 (Table 5.3) on the basis of 20 indices, the result is as follows:

$$'\rho' = 1 - \frac{\Sigma di^2}{n^3 - n} = 1 - \frac{6 \times 74}{20^3 - 20} = 0.94$$

The result also shows that there exists a positive relationship between the levels of economic development and the levels of urbanization in the major urban centres of the regions. The significance of the value of 'ρ' (0.94) has been tested with the help of the above formula, which is suitable for large samples (mentioned earlier):

$$t = \rho \sqrt{\frac{N - 2}{1 - \rho^2}} = (0.94) \sqrt{\frac{18}{1-(.94)^2}} = 11.69$$

with df = N - 2
= 20 - 2 = 18

The tabulated value of 't' for 18 (20-2) degrees of freedom (df) is 2.88 at 1%, 2.10 at 5% and 1.73 at 10% levels of significance (Appendix - 5.1) respectively. The

computed value is greater than the tabulated value of 't' hence, the correlation coefficient is quite insignificant, i.e. the urban population correlation coefficient may be considered as zero.

Table: 5.3

Calculation of Spearman's Rank Correlation Coefficient for the Levels of Economic Development (X) in the 1980's and the Level of Urbanization (Y) in 1981 by Regions.

Regions	X	R_x	Y	R_y	$d_i=R_x-R_y$	d_i^2
1.Chittagong	1.70573	2	12.93	2	0	0
2. CHT	- .55626	15	1.61	17	-2	4
3. Comilla	.34735	4	4.23	6	-2	4
4. Noakhali	- .00771	6	3.11	11	-5	25
5. Sylhet	- .14378	8	3.74	9	1	1
6. Dhaka	3.49827	1	29.16	1	0	0
7. Faridpur	- .42997	14	2.50	14	0	0
8. Jamalpur	- .80813	20	1.62	16	4	4
9. Mymensingh	- .22884	10	4.98	5	5	5
10.Tangail	- .62287	16	1.40	19	-3	9
11. Barisal	.09419	5	4.22	7	-2	4
12. Jessore	- .32022	12	3.29	10	2	4
13. Khulna	.44735	3	7.33	3	0	0
14. Kushtia	- .34195	13	2.52	13	0	0
15. Patuakhali	- .76641	19	1.25	20	-1	1
16. Bogra	- .74985	18	1.53	18	0	0
17. Dinajpur	- .67243	17	2.07	15	2	2
18. Pabna	- .26377	11	3.02	12	-1	1
19. Rajshahi	- .15067	9	4.12	8	1	1
20. Rangpur	- .03001	7	5.37	4	3	9
						$\Sigma d_i^2 = 74$

Table: 5.4

Comparative Picture of the Regions Classified on the basis of the Levels of Economic Development in the 1980s and the Percentage of Total Urban Population in 1981

Category	Levels of Economic Development		Levels of Urbanization (% of total Urban Pop.)	
Very High (VH)	Dhaka	(1)	Dhaka	(1)
	Chittagong	(2)	Chittagong	(2)
	Khulna	(3)	Khulna	(3)
High (H)	Comilla	(4)	Rangpur	(4)
	Barisal	(5)	Mymensingh	(5)
	Noakhali	(6)	Comilla	(6)
	Rangpur	(7)	Barisal	(7)
	Sylhet	(8)	Rajshahi	(8)
	Rajshahi	(9)	Sylhet	(9)
	Mymensingh	(10)	Jessore	(10)
Medium (M)	Pabna	(11)	Noakhali	(11)
	Jessore	(12)	Pabna	(12)
	Kushtia	(13)	Kushtia	(13)
	Faridpur	(14)	Faridpur	(14)
	CHT	(15)	Dinajpur	(15)
Low (L)	Tangail	(16)	Jamalpur	(16)
	Dinajpur	(17)	CHT	(17)
	Bogra	(18)	Bogra	(18)
	Patuakhali	(19)	Tangail	(19)
	Jamalpur	(20)	Patuakhali	(20)

Source : Based on Table - 5.3.

However, we may conclude that there exists a positive correlation in the 20 major urban regional centres.

Table-5.4 shows comparison between the nature of relationship between the levels of economic development in the 1980s and the levels of urbanization in 1981. The table shows that there are again the same regions (namely, Dhaka,

Chittagong, Khulna) which have very high levels of economic development as in 1970s and also have very high levels of urbanization as in 1974. Kushtia, Faridpur, Bogra have the same levels of economic development and the levels of urbanization. On the other hand, except those six regions all other regions have changed their rank order either in the levels of economic development and the levels of urbanization. Thus, we have seen from the above table that most regions have no major change in the case of levels of economic development and the levels of urbanization in Bangladesh. Mymensingh region goes down in the levels of economic development but not in the levels of urbanization. It means that it has higher levels of urbanization, but their levels of economic development falls in their rank order distribution.

From the above discussion it is observed that in most of the regions the levels of economic development have strong relationship with the levels of urbanization. The results show that in general the higher developed regions have higher growth of urbanization and less developed regions have the lowest level of urbanization.

5.2.0. Relationship between urbanization and Economic Development by Correlation and Regression Analysis:

Most of the urban researchers agree that the growth of urbanization can not be regarded as isolated phenomenon, it has complementarity with a number of factors. In this section of the study interrelationships between factors of

urbanization and factors of some selected economic development characteristics are analysed. This relationship between indicators of factors of urbanization and economic development has been studies using the techniques of correlation and regression analysis. In the application of regression analysis Stepwise Multiple Regression Analysis has been utilized to avoid the problem of multicollinearity. However, it is interesting to analyse the influence of those selected variables when considered together. This section provides the results of the analysis when the variables are jointly considered for the 1970s and 1980s periods separately.

The possible relationship between the urbanization variables (X_4 and X_5) and economic development variables (X_6 to X_{20}) has been tested by considering them as a composite index. Hence, X_4 and X_5 variables are dependent and X_6 to X_{20} variables are independent or explanatory variables.

The present study is divided in three parts viz.,

(1) Variability in the urbanization (dependent) and economic development (independent) variables,

(2) Correlation analysis and

(3) Stepwise Multiple Regression analysis.

(1) Variability in the urbanization and Economic Development Variables:

Table 5.5 shows the internal variability and mean values of the variables. Mean for density of population ($Y_1 = X_4$) and urban to total population ($Y_2 = X_5$) for the 1970s

(Continuation to page 306

has been found high with 3591.350, and 4.999 respectively, standard deviation are found to be higher for dependent variables. On the other hand, these dependent variables for 1980s have been found high with 4364.950 and 5.000 respectively and standard deviation are found to be higher for dependent variables.

From the above tables we have seen for the 1970s that the independent or explanatory variables have the highest coefficient of variation in the variable of ratios of urban industrial concentration (X_7) followed by telephones per lakh population (X_{17}), hospital bed per lakh population (X_{16}), Secondary School attendance per 1000 population (X_{20}) etc. Variability is not very high in all the explanatory variables except for some variables. On the other hand for the 1980s among the independent or explanatory variables highest coefficient of variation is found in the variable of telephones per lakh population (X_{17}) followed by ratios of urban industrial concentration (X_7), per capita value added from agriculture (X_{13}) etc., and the variability is also not very high in all the independent variables with some exceptions.

Out of 15 (X_6 - X_{20}) independent variables, there are four variables (X_7, X_{16}, X_{17}, X_{20}) and only two variables (X_7, X_{17}) which have coefficient of variation from 100% to 150% for 1970s and 1980s respectively. About eleven variables have coefficient of variation less than 100%. In a few cases like X_7, X_{17}, it is very high and X_{12} (per cent

Table - 5.5

Mean, Standard Deviation and Coefficient of Variation for the 1970's and 1980's

Variable	1970's			1980's		
	Mean	Std Deviation	Coeffieicnt of Variation	Mean	Std Deviation	Coefficient of Variation C.V
	1	2	3	1	2	3
$Y_1(X_4)$	3591.350	1357.450	37.80	4364.950	1700.382	38.96
$Y_2(X_5)$	4.999	8.205	164.13	5.000	6.279	125.58
X_6	5.002	4.134	82.65	5.002	2.187	43.72
X_7	.772	1.129	146.24	.765	1.069	139.74
X_8	42.777	11.557	27.02	41.075	3.808	9.27
X_9	1827.950	1039.827	56.88	2944.800	1512.361	51.36
X_{10}	57.831	8.416	14.55	49.451	8.830	17.86
X_{11}	16.441	8.448	51.38	20.881	8.976	42.99
X_{12}	25.725	2.565	9.97	29.534	3.393	11.49
X_{13}	753.600	525.739	69.76	1581.100	1083.213	68.51
X_{14}	137.920	35.759	25.93	153.628	18.923	12.32
X_{15}	8.608	2.794	32.46	15.621	2.727	17.46
X_{16}	16.285	18.298	112.36	22.360	18.455	82.54
X_{17}	51.691	70.149	135.71	81.961	117.627	143.52
X_{18}	0.050	0.024	48.0	.084	0.020	23.81
X_{19}	24.325	7.609	31.28	28.885	6.085	21.07
X_{20}	31.400	31.411	100.04	186.400	53.261	28.57

share of GDP from service sectors) is very low for the 1970s. In the case for 1980s, X_{17} also has the highest and X_8 (per centage of workers to total population) has the lowest coefficient of variation.

(2) **The Correlation Analysis:**

In this part of the study the relationship between the pairs of variables for seventeen selected variables (X_4 - X_{20}) of twenty regions is established by means of correlation. These are methods for determining the type and strength of a relation between two variables and the techniques provides information concerning association. The **correlation matrix (Table 5.6) and Table 5.7)** gives pearson product moment (ρ) indices and their comparison for the study. This coefficient can be viewed as providing a measure for mutuality of relationship between two variables. However, the following results of <u>coefficient of correlation</u>[8] are obtained by comparing each variable.

Table 5.6 shows that the degree of correlation between the variables varies very considerably from one to another. In very few cases the value of coefficient of correlation is found significant. In the case of 1970s correlation between dependent variable (X_4) and independent variables (X_6, X_7.....X_{20}) shows that only four independent variables have

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8. * The entire Correlation Matrix was done using the SPSS/PC + Computer Program on an IBM-PC at the Centre Nehru University, New Delhi, India.

Table: 5.6

Correlation Matrix (1970's Data)

Correlations:	X1	X2	X3	X4	X5	X6	X7	X8	X9	X10	X11
X1	1.0000	.9860**	.3178	-.4456	.1187	.0755	.2254	.5295*	.5120	.0309	.1234
X2	.9860**	1.0000	.2967	-.4525	.1012	.0891	.1958	.5290*	.5437*	.0685	.1027
X3	.3178	.2967	1.0000	.6340*	.5997*	.5869*	.3361	.0586	-.3298	-.5284*	.4644
X4	-.4456	-.4525	.6340*	1.0000	.5809*	.5719*	.3094	-.3078	-.5398*	-.6605**	.5178*
X5	.1187	.1012	.5997*	.5809*	1.0000	.9038**	.9048**	.0767	-.0038	-.8560**	.8833**
X6	.0755	.0891	.5869*	.5719*	.9038**	1.0000	.7546**	.1734	-.0368	-.7713**	.7724**
X7	.2254	.1958	.3361	.3094	.9048**	.7546**	1.0000	.1673	.2533	-.7774**	.8792**
X8	.5295*	.5290*	.0586	-.3078	.0767	.1734	.1673	1.0000	.5575*	.0358	.1296
X9	.5120	.5437*	-.3298	-.5398*	-.0038	-.0368	.2533	.5575*	1.0000	.1917	.0684
X10	.0309	.0685	-.5284*	-.6605**	-.8560**	-.7713**	-.7774**	.0358	.1917	1.0000	-.9537**
X11	.1234	.1027	.4644	.5178*	.8833**	.7724**	.8792**	.1296	.0684	-.9537**	1.0000
X12	-.5113	-.5666*	.2007	.4620	-.1004	-.0143	-.3440	-.5459*	-.8538**	-.1397	-.1645
X13	.4932	.5097	-.3788	-.6364*	-.2083	-.1988	.0219	.6981**	.9192**	.3899	-.1650
X14	.2468	.2278	.2577	.0338	.0794	.1665	.0454	.8402**	.1743	.0059	.0725
X15	.3282	.2729	.2756	.0865	.3112	.3276	.2939	.7029**	.2870	-.4022	.4526
X16	.0364	.0827	-.1199	.0236	.2991	.2791	.3896	.3634	.4910	-.0673	.2255
X17	.1015	.0870	.4559	.4961	.9497**	.8340**	.9111**	.1872	.1232	-.8820**	.9441**
X18	.2364	.1583	.8375**	.5981*	.4721	.4189	.2568	-.0504	-.4467	-.5672*	.4246
X19	.2155	.1172	.1946	.0367	.3437	.2546	.3520	.5708*	-.0025	-.4076	.3919
X20	.1965	.1575	.7498**	.5849*	.6908**	.6154*	.5056	.1169	-.1801	-.5514*	.5403*

N of cases: 20 1-tailed Signif: * - .01 ** - .001

Correlations:	X12	X13	X14	X15	X16	X17	X18	X19	X20
X1	-.5113	.4932	.2468	.3282	.0364	.1015	.2364	.2155	.1965
X2	-.5666*	.5097	.2278	.2729	.0827	.0870	.1583	.1172	.1575
X3	.2007	-.3788	.2577	.2756	-.1199	.4559	.8375**	.1946	.7498**
X4	.4620	-.6364*	.0338	.0865	.0236	.4961	.5981*	.0367	.5849*
X5	-.1004	-.2083	.0794	.3112	.2991	.9497**	.4721	.3437	.6908**
X6	-.0143	-.1988	.1665	.3276	.2791	.8340**	.4189	.2546	.6154*
X7	-.3440	.0219	.0454	.2939	.3896	.9111**	.2568	.3520	.5056
X8	-.5459*	.6981**	.8402**	.7029**	.3634	.1872	-.0504	.5708*	.1169
X9	-.8538**	.9192**	.1743	.2870	.4910	.1232	-.4467	-.0025	-.1801
X10	-.1397	.3899	.0059	-.4022	-.0673	-.8820**	-.5672*	-.4076	-.5514*
X11	-.1645	-.1650	.0725	.4526	.2255	.9441**	.4246	.3919	.5403*
X12	1.0000	-.7353**	-.2594	-.1727	-.5214*	-.2152	.4599	.0471	.0292
X13	-.7353**	1.0000	.3737	.3528	.4168	-.0874	-.4565	.1439	-.2591
X14	-.2594	.3737	1.0000	.6310*	.3345	.1416	.1152	.5533*	.2589
X15	-.1727	.3528	.6310*	1.0000	.2317	.4394	.3534	.6877**	.2766
X16	-.5214*	.4168	.3345	.2317	1.0000	.3148	-.2555	.0381	.0322
X17	-.2152	-.0874	.1416	.4394	.3148	1.0000	.3407	.4241	.5744*
X18	.4599	-.4565	.1152	.3534	-.2555	.3407	1.0000	.4027	.7049**
X19	.0471	.1439	.5533*	.6877**	.0381	.4241	.4027	1.0000	.3398
X20	.0292	-.2591	.2589	.2766	.0322	.5744*	.7049**	.3398	1.0000

N of cases: 20 1-tailed Signif: * - .01 ** - .001

statistically significant positive correlation. These are urban centres of the region (X_6), GDP from industrial sectors (X_{11}), Post offices (X_{18}) and secondary school attendance (X_{20}). These variables have significant correlation at 10% level of significance respectively. There have also negative correlation between per capita GDP (X_9), GDP from agricultural sectors (X_{10}), per capita value added from agriculture (X_{13}). These variables have significant correlation at 10%, 1% and 10% level of significance respectively.

In the case of the 1970s, we find that the relationship among independent variables (X_6 to X_{20}), in urban centres (X_6) has significant correlation with urban industrial concentration (X_7), telephones per lakh population (X_{17}), secondary school attendance (X_{20}) at 1%, 1% and 10% level of significance respectively. Urban industrial concentration (X_7) has significant correlation with GDP from industrial sectors (X_{11}) and telephones per lakh population (X_{17}) at 1% level of significance. Variable of workers to total population (X_8) has significant correlation with per capita GDP (X_9), per capita value added from agriculture (X_{13}), intensity of cropping (X_{14}), daily wage of agricultural labour (X_{15}) adult literacy (X_{19}) at 10%, 1%, 1%, 1% and 10% level of significance respectively. Variable of per capita GDP (X_9) has significant correlation with per capita value added from agriculture (X_{13}) at 1% level of significance. Variable of GDP from industrial sectors (X_{11}) has significant

correlation with telephones per lakh population (X_{17}) and secondary school attendance (X_{20}) at 1% and 10% level of significance respectively. Variable of intensity of cropping (X_{14}) has significant correlation with daily wage of agricultural labour (X_{15}) and adult literacy (X_{19}) at 10% level of significance. Variables of daily wage of agricultural labour (X_{15}) has significant correlation with adult literacy (X_{19}) at 10% level of significance. Variables of telephones per lakh population (X_{17}) and Post Offices (X_{18}) has significant correlation with secondary school attendance (X_{20}) at 1% and 1% level of significance. Variables of GDP from agricultural sectors (X_{10}), GDP from service sectors (X_{12}), per capita value added from agriculture (X_{13}) has no significant relationship with any other independent variables and most of these cases are negatively associated.

When we consider the correlation between dependent variables (X_5) and independent variables (X_6.....X_{20}) only five independent variables have significant positive correlation. These are urban centres of the region (X_6), urban industrial concentration (X_7), telephones per lakh population (X_{17}) and secondary school attendance (X_{20}) and there variables have significant correlation at 10% level of significance respectively. Between the dependent variable density of population (X_4) and urban to total population (X_5) correlation is found very high and significant at 10% level of significance.

Table : 5.7

Correlation Matrix (1980's Data)

Correlations:	X1	X2	X3	X4	X5	X6	X7	X8	X9	X10	X11
X1	1.0000	-.0140	.2951	-.4463	.1631	.4702	.2841	.3869	.5232*	.0739	.1548
X2	-.0140	1.0000	-.0739	-.1900	-.0902	-.0130	-.1471	-.4155	-.1473	.1876	-.2070
X3	.2951	-.0739	1.0000	.6879**	.7524**	.8804**	.4197	-.1008	-.2913	-.6782**	.5928*
X4	.4463	-.1900	.6879**	1.0000	.6267*	.4493	.2565	-.2536	-.5031	-.7005**	.4989
X5	.1631	-.0902	.7524**	.6267*	1.0000	.7832**	.8310**	.0863	.0284	-.8421**	.8599**
X6	.4702	-.0130	.8804**	.4493	.7832**	1.0000	.5578*	.1122	-.0196	-.5793*	.5865*
X7	.2841	-.1471	.4197	.2565	.8310**	.5578*	1.0000	.1426	.3131	-.7382**	.8714**
X8	.3869	-.4155	-.1008	-.2536	.0863	.1122	.1426	1.0000	.6152*	.2577	-.0151
X9	.5232*	-.1473	-.2913	-.5031	.0284	-.0196	.3131	.6152*	1.0000	.2052	.1532
X10	.0739	.1876	-.6782**	-.7005**	-.8421**	-.5793*	-.7382**	.2577	.2052	1.0000	-.9198**
X11	.1548	-.2070	.5928*	.4989	.8599**	.5865*	.8714**	-.0151	.1532	-.9198**	1.0000
X12	.5504*	.0798	.2632	.5282*	-.0108	.0281	-.3313	-.6155*	-.9335**	-.2326	-.1497
X13	.4722	-.0562	-.4729	-.6506**	-.2388	.2041	.0240	.6187*	.9427**	.5096	-.1744
X14	.3013	-.2921	.1288	.3781	-.1069	.0076	-.2690	.1250	-.1772	.0872	-.1242
X15	.3218	-.0954	.3272	.1976	.5968*	.4182	.6453*	.0825	.5687*	-.5166*	.7257**
X16	.4237	-.0922	-.0006	-.1567	.3984	.2062	.4653	.5471*	.8066**	-.0629	.3674
X17	.1080	-.1236	.5881*	.5410*	.9659**	.6441*	.8737**	.1613	.1640	-.8187**	.8700**
X18	-.1810	.4849	-.2589	-.1848	-.3221	-.2842	-.1981	-.6454*	-.3371	.1638	-.3045
X19	.1966	.2505	.0776	.1919	.3761	.1998	.3806	-.4257	-.0230	-.4894	.4049
X20	.2829	.0914	.0685	.3301	.3108	.0684	.3161	-.1893	-.1505	-.2143	.1501

N of cases: 20 1-tailed Signif: * - .01 ** - .001

Correlations:	X12	X13	X14	X15	X16	X17	X18	X19	X20
X1	.5504*	.4722	.3013	.3218	.4237	.1080	-.1810	.1966	-.2829
X2	.0798	-.0562	-.2921	-.0954	-.0922	-.1236	.4849	.2505	.0914
X3	.2632	-.4729	.1288	.3272	-.0006	.5881*	-.2589	.0776	.0685
X4	.5282*	-.6506**	.3781	.1976	-.1567	.5410*	-.1848	.1919	.3301
X5	-.0108	-.2388	-.1069	.5968*	.3984	.9659**	-.3221	.3761	.3108
X6	.0281	-.2041	.0076	.4182	.2062	.6441*	-.2842	.1998	.0684
X7	-.3313	.0240	-.2690	.6453*	.4653	.8737**	-.1981	.3806	.3161
X8	-.6155*	.6187*	.1250	.0825	.5471*	.1613	-.6454*	-.4257	-.1893
X9	-.9335**	.9427**	-.1772	.5687*	.8066**	.1640	-.3371	-.0230	-.1505
X10	-.2326	.5096	.0872	-.5166*	-.0629	-.8187**	.1638	-.4894	-.2143
X11	-.1497	-.1744	-.1242	.7257**	.3674	.8700**	-.3045	.4049	.1501
X12	1.0000	-.8750**	.0688	-.4704	-.7436**	-.1343	.3811	.1867	.1456
X13	-.8750**	1.0000	-.1485	.3412	.7097**	-.1150	-.2253	-.1541	-.1723
X14	.0688	-.1485	1.0000	-.0753	-.1849	-.1610	-.2604	-.5303*	-.0483
X15	-.4704	.3412	-.0753	1.0000	.6926**	.6244*	-.2771	.2713	.1605
X16	-.7436**	.7097**	-.1849	.6926**	1.0000	.4882	-.3977	.1485	.1017
X17	-.1343	-.1150	-.1610	.6244*	.4882	1.0000	-.3735	.4265	.2944
X18	.3811	-.2253	-.2604	-.2771	-.3977	-.3735	1.0000	.2914	.2527
X19	.1867	-.1541	-.5303*	.2713	.1485	.4265	.2914	1.0000	.1999
X20	.1456	-.1723	-.0483	.1605	.1017	.2944	.2527	.1999	1.0000

N of cases: 20 1-tailed Signif: * - .01 ** - .001

During the 1980s (Table 5.7), the degree of correlation between the variables also varies considerably from one another. Correlation between dependent variable (X_4) and independent variables (X_6.....X_{20}) shows that only two independent variables namely urban to total population (X_5) and telephones per lakh population (X_{17}) have significant correlation at 1% level of significance respectively. On the other hand correlation between dependent variable (X_5) and independent variables (X_6.....X_{20}) shows that only five independent variables have significant positive correlation. These are urban centres of the region (X_6), urban industrial concentration (X_7), GDP from industrial sectors (X_{11}), daily wage of agricultural labour (X_{15}) and telephones per lakh population (X_{17}) at 1%, 1%, 1%, 10% and 1% level of significance respectively.

When we consider relationship among the variables (X_6 to X_{20}) for the 1980s, we find that urban centres (X_6) has significant positive correlation with urban industrial concentration (X_7), GDP from industrial sectors (X_{11}), telephones per lakh population (X_{17}) at 10% level of significance. Variable of urban industrial concentration (X_7) has significant correlation with GDP from industrial sectors (X_{11}), daily wage of agricultural labour (X_{15}) and telephones per lakh population (X_{17}) at 1%, 10% and 1% level of significance respectively. Variable workers to total population (X_8) has significant correlation with per capita GDP (X_9), per capita value added from agriculture (X_{13}) and

hospital bed per lakh population (X_{16}) at 10%, level of significance respectively. Variable of per capita GDP (X_9) has significant correlation with per capita value added from agriculture (X_{13}), daily wage of agricultural labour (X_{15}), hospital bed per lakh population (X_{16}) at 1%, 10% and 1% level of significance respectively. Variable of GDP from industrial sectors (X_{11}) has significant correlation with daily wage of agricultural labour (X_{15}) and telephones per lakh population (X_{17}) at 1% level of significance. Variable of per capita value added from agriculture (X_{13}) has significant correlation with hospital beds per lakh population (X_{16}) at 1% level of significance. Variable of daily wage of agricultural labour (X_{15}) has significant correlation with hospital bed per lakh population (X_{16}) and telephones per lakh population (X_{17}) at 1% and 10% level of significance respectively. Variables of GDP from agricultural sectors (X_{10}), GDP from service sectors (X_{12}), intensity of cropping (X_{14}) has no positive correlation among the variables but has the significant negative correlation. Variables of X_{16}, X_{17}, X_{18}, X_{19} has no significant relationship with any other independent variables. Between the dependent variable (X_4 and X_5) correlation is found high and significant at 10% and 1% level of significance.

(3) Stepwise Multiple Regression Analysis

To test the possible relationship between urbanization variables and economic development variables Multiple

Stepwise Regression analyses was performed using the density of population (X_4) and percentage of urban to total population (X_5) as dependent variables. The other selected variables (X_6 to X_{20}) discussed above were used as independent or explanatory variables. After examining the inter correlation among all the variables, we have found that apart from high correlation between the urbanization and its explanatory variables, there is high correlation among explanatory variables as we have seen. This kind of intercorrelation generates the problem of multicollinearity. The problem of multicollinearity puts many constraints on the multiple stepwise regression analysis which can be avoided through the stepwise approach of regression analysis.

Whenever a multiple regression analysis is attempted, it is useful to know as to how the parameters get changed when new variables are added, one by one, in the model.This procedure helps us in many ways. Firstly, it tells us the contribution of an added variable in explaining the dependent variable. This explanation can be found out by seeing the changes in the value of coefficient determinants (R^2). Secondly, it helps to see whether the new variable is worth including in the model or not by seeing the changes in the value of R^2. It also helps us in keeping a watch over the changes in the values of the regression coefficients and

their standard errors.[9].

$\bar{R}^2$ is the multiple correlation adjusted for degrees of freedom. R^2 is sufficiently larger than R^2 increase with R^2. However, if the contribution to R^2 by an added variable is marginal, R^2 will increase but $\bar{R}^2$ may decrease. The variable which causes a decrease in $\bar{R}^2$ may not be included in the analysis for the 1970s and 1980s with the two dependent (X_4 and X_5) and fifteen independent (X_6 to X_{20}) variables. The results of the stepwise regression analysis are given in Table - 5.8, 5.9, 5.10 and 5.11.

Table-5.8 shows the results of the stepwise multiple regression analysis of density of population (X_4) as dependent variable ($Y_1 = X_4$) for the 1970s. The given results show that GDP from agricultural sector (X_{10}) explains the maximum proportion of variations in density of population and it is 0.436 or 43.6% . It is followed by per capita (X_9) at 61%, hospital bed per lakh population (X_{16}) at 66%. Secondary school attendance (X_{20}) at 71%, adult literacy rate (X_{19}) at 77%, urban industrial concentration (X_7) at 82%. Dependent variable of density of population (X_4) is further explained by the per capita value added from agriculture (X_{13}) at 84%, telephones per lakh population (X_{17}) at 85% variations, GDP from service sectors (X_{12}) at 86% variations. The contribution of urban centres (X_6), inten

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9. Op.Cit. no.5, p.151-153.

Table: 5.8

Results of Stepwise Regression Analysis for 1970's to Explain the Density of Population ($X_4 = Y_1$)

Variables	Regression Coefficient	S.E.	t	R^2	Increase in R^2	$\bar{R}^2$	F
1	2	3	4	5	6	7	8
Step-1							
X_{10}	- 106.538	28.544	- 3.732	.436	-	.404	13.930
Step-2							
X_{10}	- 93.278	24.779	- 3.764	.613	0.177	.568	13.492
X_9	- .559	.200	- 2.792				
Step-3							
X_{10}	- 86.065	24.193	- 3.557				
X_9	- ,742	,224	- 3.309	.665	0.052	.602	10.616
X_{16}	- 19.794	12.536	- 1.579				
Step-4							
X_{10}	- 63.807	27.190	- 2.347				
X_9	- .707	.215	- 3,277	.712	0.047	.635	9.293
X_{16}	18.894	12.019	1.572				
X_{20}	11.276	7.209	1.564				
Step-5							
X_{10}	- 78.878	26.046	- 3.028				
X_9	- .664	.198	- 3.343				
X_{16}	17.906	11.018	1.625	.774	0.062	.694	9.642
X_{20}	13.413	6.690	2.005				
X_{19}	- 49.695	25.206	- 1.972				
Step-6							
X_{10}	-139.400	40.512	- 3.441				
X_9	- .441	.219	- 2.013				
X_{16}	24.024	10.688	2.248	.822	0.048	.739	10.012
X_{20}	16.648	6.415	2.595				
X_{19}	- 50.754	23.265	- 2.182				
X_7	-598.368	322.444	- 1.856				
Step-7							
X_{10}	-168.048	45.016	- 3.733				
X_9	- 1.373	.739	- 1.859				
X_{16}	21.729	10.543	2.061				
X_{20}	16.586	6.241	2.658	.844	0.022	.753	9.315
X_{19}	- 91.594	38.388	- 2.386				
X_7	-455.562	331.905	- 1.373				
X_{13}	2.056	1.561	1.317				
Step-8							
X_{10}	-137.229	58.437	- 2.348				
X_9	- 1.432	.751	- 1.906				
X_{16}	19.799	10.916	1.814				
X_{20}	15.179	6.534	2.323	.853	.009	.747	8.042
X_{19}	- 94.229	38.987	- 2.417				
X_7	-610.928	383.280	- 1.594				
X_{13}	2.07	1.580	1.309				
X_{17}	6.81	8.088	.842				

sity of cropping (X_{14}), daily wage of agricultural labour (X_{15}) is, however, very low in increasing the value of R^2,

as is clear from the column showing difference in R^2, caused by each of them.

A study of R^2, however, shows that though the contribution of telephones per lakh population (X_{17}) is very poor in R^2, but it can be retained in the analysis, as it has caused a marginal increase in R^2 by 0.009. the value of R^2 decreases as the next variable GDP from service sectors (X_{12}) and subsequent variables are included into the model. This shows that their contribution in increasing the value of R^2 is not strong enough to counter balance the reverse effect on the explanatory power of the model due to increase in the degrees of freedom (n - k). Hence, it is better not to carry out the analysis beyond the 8th step. If we see the increase in R^2 we find that in the explanation, second variable per capita GDP (X_9) includes second highest explanation of 0.177 followed by hospital bed per lakh population (X_{16}) of 0.052, secondary school attendance (X_{20}) of 0.047, adult literacy rate (X_{19}) of 0.062, urban industrial concentration (X_7) of.048 per capita value added from agriculture (X_{13}) of 0.022. The last variable of the table gives the explanation of telephones per lakh population (X_{17}) of 0.009.

The regression coefficients from Step 1 to Step 6 show a consistently significant values for GDP from agricultural

sectors (X_{10}), Per Capita GDP (X_9) at 1% level of significance or 99% level of confidence level. After Step 6, the significance of regression coefficients do not remain consistent.

The value of F-ratio is found highly significant at all the steps of the analysis. But the value of F-ratio also becomes less significant after Step 6. Thus the relationship as given in Step 6 may be identified as an optimal fit.

Table 5.9 shows the results of the stepwise multiple regression analysis of another dependent variable i.e. percentage of urban to total population (X_5) for the 1970s. The above results show that telephones per lakh population (X_{17}) explains the maximum proportion of variation in urbanization and it is 0.901 or 90%. It is followed by urban centres of the region (X_6), secondary school attendance (X_{20}), daily wage of agricultural labour (X_{15}), urban industrial concentration (X_7), Post offices per 1000 population (X_{18}), and GDP from industrial sectors (X_{11}). The contribution of hospital bed per lakh population (X_{16}), workers to total population (X_8), GDP from agricultural sectors (X_{10}), per capita GDP (X_9) is however, very low in increasing the value of R^2, as is clear from the cloum showing the difference in R^2, caused by each of them.

A study of R^2, however, shows that though the contribution of GDP from industrial Sector (X_{11}) is very

poor in R^2, but it can be retained in the analysis as it has caused a marginal increases in R^2 by 0.006. The value of R^2 decreases as the next variable hospital bed per lakh population (X_{16}) and subsequent variables are included in the model. This also shows that their contribution is increasing the value of R^2 is not strong enough to counter balance the reverse effect of the explanatory power of the model due to decrease in degree of freedom (n-K). Hence, it is better not to carry out the analysis beyond the 7th step. If we see the increase in R^2 we find that in the explanation, second variable urban centres of the region (X_6) includes second highest explanation of 0.041, followed by variables X_{20}, X_{15}, X_7, X_{18}, X_{11} and their increase in R^2 value is 0.015, 0.012, 0.007, 0.006 respectively.

The value of F-ratio is found highly significant at the 7th steps of the analysis. Thus the relationship given in all steps may be identified as an optimal fit. The table also shows that regression coefficient of two of the explanatory variables are found significant at 1% level of significance. These are telephones per lakh population (X_{17}) and urban centres of the region (X_6). The variable X_{20}, is found to be significant at 5% level of significance. Other variables X^7, X^{18}, X^{11} are found to be significant at 10% level of significance. Rest of the variables are found to be insignificant. R^2 value shows that 0.988 or 98.8% explanation of urbanization has been given by the explanatory variables chosen. Out of seven explanatory variables, two

Table: 5.9

Result of Stepwise Regression Analysis for 1970's to Explain the Percentage of Urban to Toal Population ($X_5 = Y_2^2$)

Variables Coefficient	Regression	S.E.	t	R^2	Increase in R^2	$\bar{R}^2$	F
1	2	3	4	5	6	7	8
Step-1							
X_{17}	.11108	.008	12.864	.901	–	.896	165.484
Step-2							
X_{17}	.075	.012	6.128	.942	0.041	.936	140.463
X_6	.728	.208	3.497				
Step-3							
X_{17}	.0715	.010	6.513				
X_6	.589	.193	3.044	.957	0.015	.949	121.159
X_{20}	.040	.017	2.378				
Step-4							
X_{17}	.079	.010	7.862				
X_6	.551	.169	3.248				
X_{20}	.043	.015	2.868	.969	0.012	.961	120.983
X_{15}	– .361	.147	– 2.457				
Step-5							
X_{17}	.056	.015	3.632				
X_6	.561	.156	3.581				
X_{20}	.043	.013	3.163	.976	.007	.967	114.077
X_{15}	– .284	.141	– 2.001				
X_7	1.441	.762	1.889				
Step-6							
X_{17}	.059	.0136	4.339				
X_6	.525	.138	3.791				
X_{20}	.020	.015	1.302	.982	.006	.974	124.246
X_{15}	– .365	.129	– 2.821				
X_7	1.526	.670	2.276				
X_{18}	42.509	18.694	2.274				
Step-7							
X_{17}	.085	.015	5.349				
X_6	.486	.119	4.070				
X_{20}	.010	.014	.707				
X_{15}	– .354	.110	– 3.200	.988	.006	.981	146.657
X_7	1.857	.589	3.151				
X_{18}	62.793	18.059	3.477				
X_{11}	– .255	.106	– 2.409				
Step-8							
X_{17}	.087	.015	5.730				
X_6	.455	.115	3.943				
X_{20}	.008	.013	.607				
X_{15}	– .418	.113	-3.685	.990	.002	.983	142.27
X_7	1.545	.597	2.588				
X_{18}	73.112	18.480	3.956				
X_{11}	– .234	.102	– 2.294				
X_{16}	.026	.017	1.509				

with urbanization. Other variables are positively are (X^{15}, X^{11}) negative and both are significantly related associated.

However, the explanation by explanatory variables to dependent variables of urban to total population (X^5) shows that if we increase one unit of urban population (X^5), the increase in urban population will be .1110 unit. The highest increase is observed in urban centres of the region (X^6) where one unit increase in explanatory variable increases 0.728 unit of growth in urban population. The growth of daily wage of agricultural labour (X^{15}) shows that one unit increase in variable decreases -0.361 unit in growth in urban population. Again negative relationship is found with GDP from industrial sectors (X^{11}). Increase of one unit in urban industrial concentration (X^7), increases 1.441 unit in growth of urban population.

Table 5.10 shows the results of the stepwise multiple regression analysis of the density of population (X^4) for the 1980s study. The given results show that GDP from agricultural sectors (X^{10}) explains the maximum proportion of variation in small urban centres which contributed to the growth of urbanization. It is followed by intensity of cropping (X^{14}), development of service sectors GDP (X^{12}), expansion of telephones facilities (X^{17}), attraction of urban industrial concentration (X^7), growth of secondary school students (X^{20}), development in industrial sectors GDP (X^{11}) and increase in the per capita value added from agriculture (X^{13}).

associated.

However, the explanation by explanatory variables to dependent variables of urban to total population (X5) shows that if we increase one unit of urban population (X5), the increase in urban population will be .1110 unit. The highest increase is observed in urban centres of the region (X6) where one unit increase in explanatory variable increases 0.728 unit of growth in urban population. The growth of daily wage of agricultural labour (X15) shows that one unit increase in variable decreases -0.361 unit in growth in urban population. Again negative relationship is found with GDP from industrial sectors (X11). Increase of one unit in urban industrial concentration (X7), increases 1.441 unit in growth of urban population.

Table 5.10 shows the results of the stepwise multiple regression analysis of the density of population (X4) for the 1980s study. The given results show that GDP from agricultural sectors (X10) explains the maximum proportion of variation in small urban centres which contributed to the growth of urbanization. It is followed by intensity of cropping (X14), development of service sectors GDP (X12), expansion of telephones facilities (X17), attraction of urban industrial concentration (X7), growth of secondary school students (X20), development in industrial sectors GDP (X11) and increase in the per capita value added from agriculture (X13).

The contribution of X11, X13 and subsequent variables is very poor. A study of R_2, however, shows that though the contribution of growth of urban centres (X11) is very poor

Table:5.10

Results of Stepwise Regression Analysis for 1980s to Explain the Density of Population (X4 = Y1)

Variables	Regression Coefficient	S.E.	t	R_2	Increase in R2	$\bar{R}_2$	F
1	2	3	4	5	6	7	8
Step-1							
X10	-134.89577	32.39174	-4.165	.49071	-	.46241	17.34315
Step-2							
X10	-142.32457	26.31162	-5.409				
X14	39.76283	12.27749	3.239	.68504	0.194	.64798	18.48747
Step-3							
X10	-126.240	22.360	-5.646				
X14	36.960	10.172	3.634	.798	0.113	.760	21.100
X12	174.093	58.104	2.996				
Step-4							
X10	- 32.456	40.336	- .805				
X14	39.905	8.753	4.559				
X12	266.469	60.700	4.390	.862	0.064	.825	23.466
X17	7.892	2.990	2.639				
Step-5							
X10	- 68.496	45.565	-1.503				
X14	35.180	8.976	3.919				
X12	192.624	76.248	2.526	.881	0.019	.838	20.80
X17	10.172	3.248	3.131				
X7	-617.379	410.807	-1.503				
Step-6							
X10	-104.983	46.045	-2.280				
X14	32.489	8.363	3.885				
X12	118.099	80.273	1.471	.907	0.026	.864	21.156
X17	9.489	3.004	3.158				
X7	-963.109	418.902	-2.299				
X20	6.211	3.272	1.898				
Step-7							
X10	- 30.835	154.756	- .199				
X14	32.822	8.640	3.799				
X12	190.579	166.046	1.148	.90902			
X17	9.709	3.125	3.107		0.002	.855	17.128
X7	- 973.362	431.957	-2.253				
X20	6.311	3.376	1.869				
X11	70.716	140.493	.503				
Step-8							
X10	- 41.663	164.516	- .253				
X14	34.062	9.803	3.474				
X12	224.111	202.646	1.106				
X17	9.344	3.449	2.709			.844	13.876
X7	-926.904	472.575	-1.961	.90984	.0008		
X20	6.202	3.527	1.758				
X11	65.532	146.997	.446				
X13	.140	.444	.316				

in R_2, but it can be retained in the analysis, as it has caused a marginal increase in R_2 by 0.002. The value of R_2 decreases as the next variable growth of per capita value added from agriculture (X13) and subsequent variables are included in the model. This shows that their contribution is increasing the value of R_2 is not strong enough to counter balance the reverse effect of the explanatory power of the model due to decrease in degree of freedom (n - K). Hence, it is better not to carry out the analysis beyond the 6th step. If we see the increase in R_2 we find that in the explanation, second variable intensity of cropping (X14) includes second highest explanation of 0.194, followed by X12 of 0.113, X17 of 0.064, X7 of 0.019. The variable of the table (6th step) gives the explanation of 0.026 is X20.

Table-5.11 shows the results of the stepwise multiple regression analysis of the urban to total population (X5) for the 1980s. The given results show that telephones per lakh population (X17) explains the maximum proportion of variations in urbanization followed by urban centres of the region (X6), per capita GDP (X9), daily wage of agricultural labour (X15), hospital bed per lakh population (X16), adult literacy (X19), post offices per thousand population (X18), GDP from industrial sector (X11), intensity of cropping (X14), secondary school attendance (X2), GDP from service sectors (X12), urban industrial concentration (X7).

A study of R_2, however, shows that though the contribution of post offices per 1000 population (X18) is very poor in R_2, but it can be retained in the analysis as it has caused a marginal increase in R_2 by 0.002. The value of R_2 decreases as the next variable GDP from

Table 5.11

Results of Stepwise Regression Analysis for 1980's to Explain the Percentage of Urban to Total Population (X5 = Y2)

Variables	Regression Coefficient	S.E.	t	R^2	Increase R^2	$\bar{R}^2$	F
1	2	3	4	5	6	7	8
Step-1							
X17	.051	.003	15.821	.932	-	.929	250.314
Step-2							
X17	.042	.002	16.498	.977	0.045	.974	365.568
X6	.790	.137	5.761				
Step-3							
X17	.043	.002	21.305				
X6	.728	.108	6.691	.986	0.009	.984	401.945
X9	- .0004	.0001	-3.430				
Step-4							
X17	.041	.002	20.016				
X6	.691	.097	7.115				
X9	- .0006	.0001	- 4.531	.990	0.004	.987	390.401
X15	.224	.0945	2.376				
Step-5							
X17	.039	0.002	19.587				
X6	.704	.085	8.201				
X9	- .0009	.0001	- 5.120	.993	0.003	.990	402.690
X15	.196	.084	2.333				
X16	.037	.016	2.300				
Step-6							
X17	.040	0.0019	20.566				
X6	.683	.080	8.444				
X9	-.0009	.0001	-5.650	.994	0.001	.991	386.028
X15	.211	.079	2.679				
X16	.037	.015	2.468				
X19	- .042	.024	- 1.756				
Step-7							
X17	.042	.0018	22.915				
X6	.698	.069	9.984				
X9	.0009	.0001	- 6.054				
X15	.186	.068	2.708	.9961	0.002	.993	447.516
X16	.039	.013	3.017				
X19	-.072	.024	-2.966				
X18	17.577	7.460	2.356				
Step-8							
X17	.039	.002	15.523				
X6	.704	.067	10.476				
X9	- .0009	.0001	- 6.383				
X15	.105	.087	1.209	.9967	0.0006	.994	425.537
X16	.048	.014	3.449				
X19	-.075	.023	- 3.212				
X18	18.852	7.214	2.613				
X11	.047	.033	1.426				

industrial sectors (X11) and subsequent variables are included in the model. This shows that their contribution in increasing the value of R_2 is not strong enough to counter balance the reverse effect of the explanatory power of the model due to decrease in degree of freedom (n - K)). Hence, it is better not to carry out the analysis beyond the 7th step. If we see the increase in R_2 we find that in the explanation, second variable X6 includes second highest explanation of 0.045 followed by X9 of 0.009, X15 of 0.004, X16 of 0.003, X19 of 0.001. The last variable of the table gives the explanation of 0.002 is X18.

The value of F-ratio becomes less significant after Step 7. Thus the relationship given in all steps (upto Step 7) may be identified as an optional fit. The Table also shows that regression coefficient of two of the explanatory variables are found significant at 1% level of significance, these are X17 and X6. The variables X15, X16, X18 are found to be significant at 5% level of significance. Other variables X9, X19 are found to be insignificant. R_2 value is .996 which means 99% explanation of urban population has been given by explanatory variables. Out of seven explanatory variables, two are negative and among them only two are significantly related with urban population (X5). Other variables are positively associated.

However, the explanation given by the variables for dependent variables of urban population (X5) shows that if we increase one unit of urban population (X5), the increase in urban population will be 0.051 unit. The highest increase is observed by urban centres of the region (X6) where an increase of one unit in explanatory variables increases 0.790 unit of urban population. The per capita GDP (X9) shows that one unit increase in the variable decreases -.0004 unit in urban population. Again, negative relationship is found with adult literacy rate (X19).

In terms of the expected relationship that agriculture and partially service sectors have a dominant role in the process of urbanization, it has been found that in the regression analysis maximum explanation is given by explanatory variables related to agriculture and tertiary sectors of the economy. In the analysis of regression coefficient variables taken from agriculture and tertiary sectors give the maximum explanation for the dependent variable X4 and X5. This is validated in case of urban to total population (X5) as dependent variable and urban centres of the region (X6) is the explanatory variable for the 1970s and 1980s. This X6 variable plays an important role in the process of urbanization in the model of regression analysis this variable has been found to be second most dominant variable with second highest explanation for both the 1970s and 1980s. In both the

models the variable urban centres of the region (X6) has the highest value of regression coefficient i.e. 0.728 in the 1970s and 0.790 in the 1980s.

5.3.0 Conclusions :

The major conclusions which emerge from this study are :

1. In Bangladesh, the national pattern of urbanization has an identifiable relationship with regional or spatial economic development. Regional variations in the level of development are linked to regional differences in urbanization. It was attempted to analyse the relationship between economic development and urbanization by "Ranking" method on the basis of FPC for levels of economic development and percentage of total urban population for levels of urbanization for the 1970s and 1980s. The significant economic variables (selected) which are linked to urbanization were measured by Correlation and stepwise Multiple Regression Analysis. The correlation between urban population and some of its explanatory variables was worked out which shows that there exists a positive and high (r=0.88) relationship between the levels of economic development and the levels of urbanization in all the major regional urban centres and their correlation at 1%, 5% and 10% level was significance for the 1970s.

2. There are three major regions namely Dhaka, Chittagong,

Khulna with very high levels of economic development and also very high levels of urbanization. On the other hand, Mymensingh and Rangpur regions have lower levels of economic development than the levels of urbanization. Some regions have higher levels of economic development, but their levels of urbanization was the lowest.

3. We have observed that there also exists a positive and high correlation (r=0.94) between levels of economic development and levels of urbanization in the major urban regions of Bangladesh in 1980's.

4. The comparison between the nature of relationship between the levels of economic development and the levels of urbanization for the 1980s gives the same results which existed in 1970s with some significant regional variations. Thus, it is observed that in most of the regions the levels of urbanization have strong relationship with the levels of economic development. The results show that the higher developed regions have higher growth of urbanization and less developed regions have the lowest level of urbanization.

5. We have seen the 1970s that the explanatory variables have the highest coefficient of variation in the ratios of urban industrial concentration followed by telephones per lakh population, hospital bed per lakh population, secondary school attendance per 1000

population etc. On the other hand, for the 1980s among the explanatory variables highest coefficient of variation is found in the variable of telephones per lakh population followed by ratios of urban industrial concentration etc. It is important to note that variability is not very high in all the explanatory variables with some exceptions both for 1970's and 1980's.

6. It has been found that the degree of correlation between the variables varies very considerably from one to another. In very few cases the value of coefficient of correlation is found significant. In the case of the 1970s, we found that the relationship among explanatory variables (X6 to X20) in urban centres (X6) has significant correlation with urban industrial concentration (X7), telephones per lakh population (X17) secondary school attendance (X20) at 1%, 1% and 10% level of significance respectively. Some of the variables i.e. GDP from agricultural sectors (X10), GDP from service sectors (X12), etc. do not have a significant relationship with any other explanatory variable and most of there are negatively associated.

7. In the same analysis for the 1980s observed that with some exceptions the degree of correlation between the variables also varies considerably from one to another.

The stepwise multiple regression analysis of

percentage of urban to total population (Y2 = X5) for the 1970s shows that telephones per lakh population (X17) explained the maximum proportion of variation in urbanization (90%). It is followed by urban centres of the region (X6), secondary school attendance (X20), etc. The results also show that regression coefficient of two of the explanatory variables was significant at 1% level of significance. These are telephone per lakh population (X17) and urban centres of the region(X6).

8. Agriculture and the service sectors have a dominant role in the process of urbanization. It has been found in the regression analysis that the maximum contribution is given by explanatory variables related to agriculture and tertiary sectors of the economy. The urban centres of the region (X6) has been found to be the second most dominant variable and has the second highest contribution in both the 1970's and 1980's.

Summary and Conclusions

CHAPTER - VI

6.0.0 Summary and Conclusions :

The present study was aimed to analyse the spatial pattern and process of urbanization in Bangladesh during 1951-1981. This study has also analysed the spatial-structure and levels of economic development in Bangladesh during the 1970's and 1980's. It also analysed the relationship between the process of urbanization and economic development in Bangladesh for same period.

In the first part of the study the Pattern and Process of Urbanization has been analysed. To get a complete picture of related aspects the composite index of urbanization has been worked out for four points of time 1951,1961, 1974 and 1981. Data for urban growth is analysed from 1901-1981. The measurement of urbanization has been grouped in few categories, i.e., the degree of urbanization, tempo of urbanization, distribution of urbanization and concentration (i.e., urban industrial concentration, location quotient of urban population) and relative distance to the nearest towns. Several methods have been used to find out the process of urbanization in Bangladesh.

The study also deals with the identification of selected explanatory variables for the measurement of levels of economic development. The whole analysis had done by principal component method. The selected variables have been

worked out to find out their implications on regional pattern of economic development in Bangladesh.

The study finally attempts a correlation analysis to find the relationship between the selected explanatory variables and dependent variables and also among explanatory variables. Multiple regression analysis is worked out to see the most influential variables for the process of urbanization in Bangladesh at regional levels.

PART I :

Bangladesh is one of the least urbanized and economically backward or underdeveloped country of the Third World nations. During eighties, Bangladesh has experienced an increase in the level of urbanization significantly due to higher growth in comparison to the previous decade. Emerging new towns in the regions of Bangladesh also supported the higher pace of urbanization. The country experienced considerable urban growth in the recent past and as is expected a large share of this growth has gone in favour of large towns and cities. While the small and medium-sized towns have recorded steep fall in their shares in the total urban population. An opposite trend is to be noticed in the case of large towns and cities. Wide regional variations are also noticed in the pattern of urban growth as well as in the levels of urbanization in Bangladesh. It is important to note that economically backward regions have experienced high urban growth in the small towns. On the

other hand the economically developed regions have greater number of large and medium-sized towns and these are growing at a significantly higher rate compared to the small towns.

The major conclusions which emerge from this study are:

1. It has been observed that there are temporal and spatial variations in the country's regional patterns. Among the demographic variables, there have been significant spatial variation as well as temporal variation in the characteristics of urban population.

2. The level of urban growth in Bangladesh is unquestionably rising at both national and regional levels. Thus we have observed that the share of urban population was 2.43 per cent in 1901 and the expected urban population will be 36.80 per cent in 2015. The most phenomenal growth of urban population took place during 1961-74, the increase in population being as high as 137.57 per cent.

3. Improvement in level of urbanization and urban growth rate during 1970's and 1980's is still unable to raise this country in the category of higher urbanized regions of the world. It is also noticed that there was a higher urban growth rate in Bangladesh during 1951-81 and that the process of urbanization during 1951-81 was faster than the process of urbanization during 1951-61, 1961-74. But still level of urbanization is low in this country.

4. During the last eighty years, during 1901-1981, the percentage of urban to total population in the country has increased two fold. It means there is slower pace of urbanization within the regions of Bangladesh. It is also important to note that Bangladesh is not a very urbanized country but it has emerged significantly on the scene of urbanization due to higher growth rate in 1951-81.

5. Medium-sized urban centres (with 25,000-99,999 population) emerged in the middle of the present century and they covered a very low percent of population.

6. Considering the growth in the number of towns along with percentage share in urban population Class III towns (25,000-49,999) contained the highest number of towns (33.77 per cent) in 1981. We have also observed that proportionally more people were living in larger urban centres or in the Class I cities in each successive census years, particularly since 1961. We have also observed that during the period 1901-1931, 1931-1951 and 1951-81 urban population was distributed differently in the urban centres in Bangladesh.

7. The accelerated growth of urbanization in Bangladesh in recent time has not been evenly distributed among urban centres. The capital city and other large urban centres, through their own natural population increase

and rural-urban migration have been gaining substantial proportions of the urban population increases. It is also observed that the major urban centres were more or less evenly spread among the regions during the census years 1951-81. The results also show that some major urban centres are growing fast while few are growing very slowly. It is also observed that for the time being the number of urban centres were growing in the highest as well as in the lowest category. The highest variation was 80.60 per cent in 1961-74 and the lowest was 42.63 percent in 1974-81. It was also observed that urban population growth varied during 1951-61 to 1951-81 census periods and the rate of variation was higher in the present decades.

8. The disparity in urban growth in the regions of Bangladesh was generally of a much higher order in the 1950's, 1960's, 1970's than in the 1980's and was also of a much higher order in the smaller order towns than in the cities.

9. It was observed that backward regions have the highest density of towns (i.e. Bogra, Dinajpur, Faridpur, Jamalpur etc.) and developed regions have the lowest density of town (i.e. Dhaka, Chittagong, etc.).

10. Urban population density varies from census to census as well as from region to region except in Dhaka region.

11. Large cities are growing faster than medium and small towns.

12. The overall picture for the urban population during 1951-81 shows that on an average urban population growth by per sq.Km. of urban land area was higher in all the regions of the country. This means that population is increasing in largely the big urban centres of the regions because of rural-urban migration. The results also indicated that the neighbouring urban centres were very much connected with the large urban centres and therefore the big urban centres are growing fast in respect to the population growth and to the expansion of the urban land area.

13. The percent of urban population to total population has increased in almost all the regions of Bangladesh and the highest increase has been observed in Noakhali, Khulna, Jessore, regions during 1951-81. In the spatial variation it has been found that some few regions like Dhaka, Chittagong, Khulna have high percentage of urban population, while all other regions have very low percentage of urban population to total population.

14. The distribution of urban population in different size-classes in different regions to total urban population in 1981, shows that more than 70% urban population was

concentrated in Dhaka(93.98%), Khulna (84.68%), Pabna (74.95%) and Chittagong (37.92%) regions. It was also observed that in Noakhali (100.0%) and Tangail (100.0%) the urban population concentrated in medium-sized towns CHT (33.08%), Patuakhali (25.71%), Sylhet (23.35%) regions have more population in small-towns to total urban population. Thus, we have observed in 1981 ranking of different size-classes of towns in Bangladesh that Chittagong region and then Dhaka region had the higher-order ranks for class I cities, on the other hand Mymensingh had the lowest rank. CHT, Noakhali, Faridpur, Jamalpur, Tangail, Kushtia, Patuakhali, Bogra, Dinajpur have no class I cities. For the medium-sized towns Noakhali, Jamalpur, Tangail had the top rank and Chittagong, Dhaka, Sylhet had the lowest rank. In small-size category CHT had the highest and Faridpur had the lowest rank and most of the regions had no small towns.

15. It has been observed that the percentage distribution over the period indicated that the annual compound growth rate was the highest in the Noakhali region (10.26%) during 1951-81 period . The lowest compound growth rate of urban population was in Dinajpur region (4.32%) in the same period. The corresponding figures of annual compound growth rate of urban population was little different during the periods 1901-11 upto 1941-51. After these periods the rate was higher.

16. In most of the major regions urban process is related to industrial development. Thus we have observed that in the industry based towns and cities are rapidly increasing. Dhaka, Chittagong regions have high intensity of urbanization and CHT, Jamalpur, Tangail, Patuakhali, Bogra, Dinajpur have low intensity of urbanization during 1951-81 period.

17. Share of urban population gradually increased over the years. The overall urban population increased from 4.38 to 15.18 per cent during 1951-81.

18. According to the L.Q. value we have observed that only in two regions (10%) urban concentration is more than other regions of the country. Four regions (65%) belonged to low levels of urbanization and only two regions (10%) belonged to moderate levels. L.Q. also showed decreasing concentration of urban population in certain regions namely Bogra, Faridpur, Tangail regions. Other regions have witnessed increasing concentration.

19. We have observed that the mean distance between towns of over 5,000 population was 7.18 Km., and the national average of the maximum distance to the nearest town was 35.52 Km. The distance from the nearest town was least in Noakhali region (3.39 Km) followed by Patuakhali, Bogra, Tangail, Barisal region which are the least urbanized regions from the point of view of maximum

distance to the nearest town.

20. In terms of the weighted Composite Index of urbanization, Dhaka, Chittagong and Khulna have a high composite index. Dhaka has occupied a higher position in comparison to all other regions of Bangladesh because of higher number of towns. Weighted urbanized index is very low in the Jamalpur, Bogra, and Tangail regions.

PART II :

To get a concrete picture of the spatial economic development pattern in Bangladesh "Factor Analysis" was used. In this present section of the study, the choice of indicators was affected by the specific characteristics of the study regions. There are two sets of indicators which have been selected for 1970's and 1980's for measurement of levels of economic development on a composite scale.

Bangladesh is an agro-based country and its development mainly depends on agro-economic characteristics. In every stage, the development in regional settings are varying and the inter-regional as well as the intra-regional disparity is higher in different sectors of the economy other than agriculture. In this we found that the large and bigger urban centres are developing at a higher rate and the small urban centres or the low-economy based urban centres at a lower rate. These types of development regions are not

benefiting from the government initiative. It is also evident that recent economic development efforts with an urban bias and emphasis on urban industrialization has precipitated the twin processes of concentration of urban population in a few selected urban areas (e.g. Dhaka, Chittagong and Khulna regions).

Thus from the above analysis it also becomes clear that the regional disparities or the inequality are prominent with respect to major development aspects and are significant with regard to few urban and agricultural aspects. Similarly, in the provision of major urban facilities (i.e. education, telephones, post offices etc.) regional disparities are apparent in the countries regional setting.

The major conclusions we derived about the explanatory powers of various selected development variables are :

1. Among the various factors of economic development, the agricultural sector is the major factor for the development of the country as well as of the regions.

2. Economic development variables from the First Principal Component (FPC) Score represent the significant contribution and those components identify that all sectoral development depends on the urban economy. This urban economy is also based on agricultural variables. Thus, agricultural development is the major factor for urban development as well as the overall development of

the country.

3. Urban amenities are also lower in the poor development regions (i.e. education, hospital, telephones, post offices etc.). Thus all development is concentrated in the urban industrial regions (i.e., Dhaka, Chittagong, Khulna).

4. It is also a positive direction that rural-urban linkages are strong because most of the urban centres are growing on the basis of agricultural economy.

5. The service sector is dominant in the urban areas of the country and in the rural areas there are vast inequalities.

6. From the FPC for the 1970's we have observed that of urban development and the concentration of industrial the level activities corresponds with the spatial patterns of urbanization. The two relatively prosperous regions (i.e., Dhaka, Chittagong) have highest percentage of urban population, on the other hand economically and industrially backward regions (i.e., Tangail, Faridpur, Mymensingh) have experienced a lower level of urbanization.

7. We have identified from the FPC for the 1980's that the highest level of component scores are linked with only one i.e. Dhaka region, which has the highest level of urban population and urban amenities. On the other hand

Patuakhali, Bogra, Dinajpur regions have the lowest level of urban population and urban amenities. Thus, the general level of urban process and the form of concentration pattern of industrial growth corresponds with the spatial patterns of urbanization. So, relatively prosperous regions which have highest percentage of urban population also offer economic opportunity in urban industrial and service sectors. In contrast, economically and industrially backward regions have experienced lesser urbanization.

8. The developmental efforts in the 1970's and 1980's have lead to significant change in the levels of economic development of the regions as reflected in the rank - order variation between the 1970s and the 198s. In this study we have seen that the changes have affected most of the regions which appear to either increase or decrease in their economic levels. Only three major urban regions namely, Dhaka, Chittagong, Khulna have not changed and they have the higher level of development. In contrast, there are nine regions which have increased their levels and another eight regions which have changed from the upper level to the lower level at a decreasing rate.

9. In Bangladesh, the national pattern of urbanization has an identifiable relationship with regional or spatial economic development. Regional variations in the level

of development are linked to regional differences in urbanization. It was attempted to analyse the relationship between economic development and urbanization by "Ranking" method on the basis of FPC for levels of economic development and percentage of total urban population for levels of urbanization for the 1970s and 1980s. The significant economic variables (selected) which are linked to urbanization were measured by Correlation and stepwise Multiple Regression Analysis. The correlation between urban population and some of its explanatory variables was worked out which shows that there exists a positive and high (r=0.88) relationship between the levels of economic development and the levels of urbanization in all the major regional urban centres and their correlation at 1%, 5% and 10% level was significance for the 1970s.

10. There are three major regions namely Dhaka, Chittagong, Khulna with very high levels of economic development and also very high levels of urbanization. On the other hand, Mymensingh and Rangpur regions have lower levels of economic development than the levels of urbanization. Some regions have higher levels of economic development, but their levels of urbanization was the lowest.

11. We have observed that there also exists a positive and high correlation (r=0.94) between levels of economic

development and levels of urbanization in the major urban regions of Bangladesh in 1980's.

12. The comparison between the nature of relationship between the levels of economic development and the levels of urbanization for the 1980s gives the same results which existed in 1970s with some significant regional variations. Thus, it is observed that in most of the regions the levels of urbanization have strong relationship with the levels of economic development. The results show that the higher developed regions have higher growth of urbanization and less developed regions have the lowest level of urbanization.

13. We have seen the 1970s that the explanatory variables have the highest coefficient of variation in the ratios of urban industrial concentration followed by telephones per lakh population, hospital bed per lakh population, secondary school attendance per 1000 population etc. On the other hand, for the 1980s among the explanatory variables highest coefficient of variation is found in the variable of telephones per lakh population followed by ratios of urban industrial concentration etc. It is important to note that variability is not very high in all the explanatory variables with some exceptions both for 1970's and 1980's.

14. It has been found that the degree of correlation between the variables varies very considerably from one to another. In very few cases the value of coefficient of correlation is found significant. In the case of the 1970s, we found that the relationship among explanatory variables (X_6 to X_{20}) in urban centres (X_6) has significant correlation with urban industrial concentration (X_7), telephones per lakh population (X_{17}) secondary school attendance (X_{20}) at 1%, 1% and 10% level of significance respectively. Some of the variables i.e. GDP from agricultural sectors (X_{10}), GDP from service sectors (X_{12}), etc. do not have a significant relationship with any other explanatory variable and most of there are negatively associated.

15. In the same analysis for the 1980s observed that with some exceptions the degree of correlation between the variables also varies considerably from one to another.

The stepwise multiple regression analysis of percentage of urban to total population ($Y_2 = X_5$) for the 1970s shows that telephones per lakh population (X_{17}) explained the maximum proportion of variation in urbanization (90%). It is followed by urban centres of the region (X_6), secondary school attendance (X_{20}), etc. The results also show that regression coefficient of two of the explanatory variables was significant at 1% level of significance. These are telephone per lakh population (X_{17}) and urban centres of the region(X_6).

16. Agriculture and the service sectors have a dominant role in the process of urbanization. It has been found in the regression analysis that the maximum contribution is given by explanatory variables related to agriculture and tertiary sectors of the economy. The urban centres of the region (X_6) has been found to be the second most dominant variable and has the second highest contribution in both the 1970's and 1980's.

In this study, only a few socio-economic variables have been used. While for a further detailed analysis, some more variables are also required for highlighting the process of urbanization and the levels of economic development in the backward and developed regions of the country.

Rapid urbanization in Bangladesh during the 1980's can be said to be a process of urbanization having very little relationship with the process of economic development.

APPENDIX

Appendix - 3.1

Total Urban Area (in Km_2) of the Region in Bangladesh, 1951 - 1981

Regions	1951	1961	1974	1981
1.Chittagong	145.6	145.6	145.6	705.1
2. CHT	-	-	65.0	148.6
3. Comilla	36.6	36.4	77.2	98.3
4. Noakhali	7.8	7.8	21.6	29.9
5. Sylhet	24.5	24.5	37.2	154.3
6. Dhaka	122.5	122.5	190.0	661.9
7. Faridpur	36.4	36.4	39.7	77.8
8. Jamalpur	59.8	59.8	68.7	68.7
9. Mymensingh	49.4	49.4	73.3	140.1
10. Tangail	13.0	13.0	30.2	54.8
11. Barisal	44.2	44.2	46.3	59.0
12. Jessore	36.4	36.4	74.0	167.6
13. Khulna	57.2	57.2	75.0	151.0
14. Kushtia	20.8	20.8	56.9	231.0
15. Patuakhali	5.2	5.2	36.4	38.8
16. Bogra	13.00	13.00	13.0	44.6
17. Dinajpur	41.6	41.6	38.9	65.4
18. Pabna	31.2	31.2	45.4	91.9
19. Rajshahi	33.8	33.8	38.0	144.1
20. Rangpur	59.8	59.8	119.2	147.3
Bangladesh	838.6	838.6	1291.6	3280.2

Source : 1. Census of Pakistan, 1951 and 1961, Government of Pakistan, East Bengal Tables (Reports and Tables),vol.3 for 1951 and vol.2 for 1961, Karachi, Pakistan.

2. Bangladesh Bureau of Statistics (BBS), Bangladesh Population Census, 1974 and 1981, Dhaka Bangladesh.

Appendix - 3.2

Total Urban Population of the Region in Bangladesh, 1951-1981 (1000 in numbers)

Regions	1951	1961	1974	1981
1. Chittagong	296	373	1017	1710
2. CHT	-	23	55	213
3. Comilla	117	139	263	559
4. Noakhali	22	34	74	412
5. Sylhet	61	71	140	495
6. Dhaka	411	754	2586	3857
7. Faridpur	58	79	124	331
8. Jamalpur	+	+	112	214
9. Mymensingh	182	240	338	659
10. Tangail	+	+	116	185
11. Barisal	132	119	164	558
12. Jessore	37	75	192	435
13. Khulna	69	172	610	970
14. Kushtia	41	63	167	333
15. Patuakhali	*	*	40	166
16. Bogra	36	47	88	203
17. Dinajpur	77	72	121	274
18. Pabna	69	100	228	399
19. Rajshah	85	120	263	545
20. Rangpur	128	159	279	710
Bangladesh	1821	2640	6977	13228

Notes : + included with Mymensingh region.
* included with Barisal region

Sources : Same as Appendix - 3.1.

Appendix 3.3

Number and Percentage of Towns by Size-Classes in Major Regions by Bangladesh, 1951

Regions	Cities	Medium Size Towns		Small Towns		
	Class I Towns	Class II Towns	Class III Towns	Class IV Towns	Class V Towns	Total Number of Town (All Sizes)
1.Chittagong	1(50.0)	-	-	-	1(50.0)	2
2. CHT	-	-	-	-	1(100.0)	1
3. Comilla	-	-	3(100.0)	-	-	3
4. Noakhali	-	-	-	1(50.0	1(50.0)	2
5. Sylhet	-	-	1(25.0)	1(25.0)	2(50.0)	4
6. Dhaka	1(33.33)	1(33.33)	-	-	1(33.33)	3
7. Faridpur	-	-	1(33.33)	2(66.67)	-	3
8. Jamalpur	-	-	1(50.0)	1(50.0)	-	2
9. Mymensingh	-	-	1(14.29)	4(57.14)	2(28.57)	7
10.Tangail	-	-	-	1(100.0)	-	1
11. Barisal	-	1(25.0)	-	1(25.0)	2(50.0)	4
12. Jessore	-	-	-	1(50.0)	1(50.0)	2
13. Khulna	-	-	1(25.0)	1(25.0)	2(50.0)	4
14. Kushtia	-	-	-	1(33.33)	2(66.67)	3
15. Patuakhali	-	-	-	1(100.0)	-	1
16. Bogra	-	-	-	1(50.0)	1(50.0)	2
17. Dinajpur	-	-	2(66.67)	-	1(33.33)	3
18. Pabna	-	-	2(100.0)	-	-	2
19. Rajshahi	-	-	1(25.0)	3(75.0)	-	4
20. Rangpur	-	1(16.67)	1(16.67)	1(16.67)	3(50.0)	6
Bangladesh	2(3.39)	(5.08)	14(23.73)	20(23.73)	20(33.90)	59

Notes: 1. Percentage Share is given in parenthesis.
2. Towns and cities are classfied according to population size as over 100,000 population for Class I cities; 50,001 100,000 population for class II towns, 25,001 - 50,000 population for class III towns, 10,001 - 25,000 populatio for class IV and 5,001 - 10,000 population for class V tow

Source: Census of Pakistan, 1951 and 1961, Government of Pakistan, Ea Bengal Tables, Vol.3 for 1951 and Vo.2 for 1961. (Tables Part II, 2-3 and 3-17).

Appendix 3.4

Number and Percentage of Towns by Size-Classes in Major Regions of Bangladesh, 1961

1Regions	Cities	Medium Size Towns		Small Towns		Total Number of Towns (All Sizes)
	Class I Towns	Class II Towns	Class III Towns	Class IV Towns	Class V Towns	
1.Chittagong	1(50.0)	-	-	-	1(50.0)	2
2. CHT	-	-	-	2(66.67)	1(33.33)	3
3. Comilla	-	1(25.0)	2(50.0)	-	1(25.0)	4
4. Noakhali	-	-	-	1(50.0)	1(50.0)	2
5. Sylhet	-	-	1(25.0)	1(25.0)	2(50.0)	4
6. Dhaka	2(33.0)	1(16.67)	-	2(33.33)	1(16.67)	6
7. Faridpur	-	-	2(50.0)	1(25.0)	1(25.0)	4
8. Jamalpur	-	-	1(50.0)	1(50.0)	-	2
9. Mymensingh	-	1(14.29)	1(14.29)	3(42.86)	2(28.57)	7
10.Tangail	-	-	-	1(100.0)	-	1
11. Barisal	-	1(25.0)	-	2(5.00)	1(50.0)	4
12. Jessore	-	-	1(20.00)	-	4(80.0)	5
13. Khulna	1(33.33)	-	-	2(66.67)	-	3
14. Kushtia	-	-	-	2(33.33)	4(66.67)	6
15. Patuakhal	-	-	-	1(100.0)	-	1
16. Bogra	-	-	1(50.0)	-	1(50.0)	2
17. Dinajpur	-	-	2(66.67)	-	1(33.33)	3
18. Pabna	-	-	2(66.67)	1(33.33)	-	3
19. Rajshahi	-	1(25.0)	1(25.0)	2(50.0)	-	4
20. Rangpur	-	1(16.67)	1(16.67)	2(33.33)	2(33.33)	6
Bangladesh	4(5.56)	6 (8.33)	15(20.83)	24(33.33)	23(31.94)	72

Note: Same as in Appendix 3.3

Source: Same as in Appendix 3.3

Appendix 3.5

Number and Percentage of Towns by Size-Classes in Major Regions of Bangladesh, 1974

1Regions	Cities	Medium Size Towns		Small Towns		Total Number of Towns (All Sizes)
	Class I Towns	Class II Towns	Class III Towns	Class IV Towns	Class V Towns	
1.Chittagong	1(50.0)	-	-	1(50.0)	-	2
2. CHT	-	-	-	2(50.0)	2(50.0)	4
3. Comilla	-	3(50.0)	-	3(50.0)	-	6
4. Noakhali	-	-	1(33.33)	2(66.67)	-	3
5. Sylhet	-	1(14.29)	-	4(57.14)	2(28.57)	7
6. Dhaka	2(15.38)	1(7.69)	4(30.77)	6(46.15)	-	13
7. Faridpur	-	1(20.0)	2(40.0)	2(40.0)	-	5
8. Jamalpur	-	-	1(100.0)	-	-	1
9. Mymensingh	1(14.29)	-	3(42.86)	3(42.86)	-	7
10.Tangail	-	1(33.33)	1(33.33)	1(33.33)	-	3
11. Barisal	-	1(25.0)	-	3(75.0)	-	4
12. Jessore	-	1(14.29)	1(14.29)	3(42.86)	2(28.57)	7
13. Khulna	1(25.0)	-	2(50.0)	1(25.0)	-	4
14. Kushtia	-	-	2(20.0)	6(60.0)	2(20.0)	10
15. Patuakhali	-	-	1(50.00	1(50.0)	-	2
16. Bogra	-	-	1(25.0)	2(50.0)	1(25.0)	4
17. Dinajpur	-	1(14.29)	-	4(57.14)	2(28.57)	7
18. Pabna	-	2(33.33)	-	3(50.0)	1(16.67)	6
19. Rajshahi	1(20.0)	-	2(40.0)	2(40.0)	-	5
20. Rangpur	-	2(33.33)	2(33.33)	2(33.330	-	6
Bangladesh	6(5.66)	14(13.21)	23(21.70)	51(48.11)	12(11.32)	106

Notes: 1961 total population of urban localities shown in this table differ from that given in 1961 census reports due to excusxive of two thanas as (Debhata and Nalchity) from the urba localities in 1974.

* Figures represents in parenthesis in percentage share.

Source: Government of Bangladesh (GOB), Population census, 1974 Belletin 2, Table -4, pp 97-111 Dhaka, Bengladesh.

Appendix 3.6

Number and Percentage of Towns by Size-Classes in Major Regions of Bangladesh, 1981

1Regions	Cities	Medium Size Towns		Small Towns		Total Number of Towns (All Sizes)
	Class I Towns	Class II Towns	Class III Towns	Class IV Towns	ClassV Towns	
1.Chittagong	1(50.0)	-	1(50.0)	-	-	2
2. CHT	-	-	1(50.0)	1(50.0)	-	2
3. Comilla	1(33.33)	2(66.67)	-	-	-	3
4. Noakhali	-	2(50.0)	2(50.0)	-	-	4
5. Sylhet	1(20.0)	-	1(20.0)	3(60.0)	-	5
6. Dhaka	2(33.33)	2(33.33)	2(33.33)	-	-	6
7. Faridpur	-	2(50.0)	1(25.0)	1(25.0)	-	4
8. Jamalpur	-	2(100.0)	-	-	-	2
9. Mymensingh	1(12.5)	2(25.00)	1(12.5)	4(50.0)	-	8
10.Tangail	-	1(50.0)	1(50.0)	-	-	2
11. Barisal	1(25.0)	-	3(75.0)	-	-	4
12. Jessore	1(14.29)	-	3(42.86)	2(28.57)	1(14.29)	7
13. Khulna	1(25.0)	1(25.0)	2(50.0)	-	-	4
14. Kushtia	-	2(50.0)	-	2(50.0)	-	4
15. Patuakhali	-	-	1(50.0)	1(50.0)	-	2
16. Bogra	-	1(33.33)	1(33.33)	1(33.33)	-	3
17. Dinajpur	-	1(33.33)	1(33.33)	1(33.33)	-	3
18. Pabna	2(66.67)	1(33.33)	-	-	-	3
19. Rajshahi	1(25.0)	2(50.0)	1(25.0)	-	-	4
20. Rangpur	2(33.33)	-	4(66.67)	-	-	6
Bangladesh	14(17.95)	21(26.92)	26(33.33)	16(20.51)	1(1.28)	78

Notes : Figures in the parenthesis represents total urban population in percentage share.

Source : BBS, Statistical Year Book, 1983-84, Statistics Division, Govt. of Bangladesh, Dhaka, p.113.

Appendix 3.7

Percentage Distribution of Urban Places in 50,001 - 100,000 Population Size, Category, Gangladesh 1951-1981

Regions	1951(%)	1961(%)	1974(%)	1981(%)
1.Chittagong	-	-	-	-
2. CHT	-	-	-	-
3. Comilla	-	1(16.67)	3(21.43)	2(9.52)
4. Noakhali	-	-	-	2(9.52)
5. Sylhet	-	-	1(7.14)	-
6. Dhaka	1(33.33)	1(16.67)	1(7.14)	2(9.52)
7. Faridpur	-	-	1(7.14)	2(9.52)
8. Jamalpur	-	-	-	2(9.52)
9. Mymensingh	-	1(16.67)	-	2(9.52)
10.Tangail	-	-	1(7.14)	1(4.76)
11. Barisal	1(33.33)	1(16.67)	1(7.14)	-
12. Jessore	-	-	1(7.14)	-
13. Khulna	-	-	-	1(4.76)
14. Kushtia	-	-	-	2(9.52)
15. Patuakhal	-	-	-	-
16. Bogra	-	-	-	1(4.76)
17. Dinajpur	-	-	1(7.14)	1(4.76)
18. Pabna	-	-	1(14.29)	1(4.76)
19. Rajshahi	-	1(16.67)	-	2(9.52)
20. Rangpur	1(33.33)	1(16.67)	2(14.29)	-
Bengladesh	3(100.0)	6(100.0)	14(100.0)	21(100.0)

Notes: Figures in the parenthesis represents total urban places in percentage share.

Source: Same as Appendix 3.3, 3.4, 3.5 and 3.6

Appendix 3.8

Percentage Distribution of Urban Places in 25,001 - 50,000 Population Size Category, Banmgladesh 1951-1981

Regions	1951(%)	1961(%)	1974(%)	1981(%)
1.Chittagong	-	-	-	1(3.85)
2. CHT	-	-	-	1(3.85)
3. Comilla	3(21.43)	2(13.33)	-	-
4. Noakhali	-	-	1(4.35)	2(7.69)
5. Sylhet	1(7.14)	1(6.67)	-	1(3.85)
6. Dhaka	-	-	4(17.39)	2(7.69)
7. Faridpur	1(7.14)	2(13.33)	2(8.70)	1(3.85)
8. Jamalpur	1(7.14)	1(6.67)	1(4.35)	-
9. Mymensingh	1(7.14)	1(6.67)	3(13.04)	1(3.85)
10.Tangail	-	-	1(4.35)	1(3.85)
11. Barisal	-	-	-	3(11.54)
12. Jessore	-	1(6.67)	1(4.35)	3(11.54)
13. Khulna	1(7.14)	-	2(8.70)	2(7.69)
14. Kushtia	-	-	2(8.70)	-
15. Patuakhali	-	-	1(4.35)	1(3.85)
16. Bogra	-	1(6.67)	1(4.35)	1(3.85)
17. Dinajpur	2(14.29)	2(13.33)	-	1(3.85)
18. Pabna	2(14.29)	2(13.33)	-	-
19. Rajshahi	1(7.14)	1(6.67)	2(8.70)	1(3.85)
20. Rangpur	1(7.14)	1(6.67)	2(8.70)	4(15.38)
Bangladesh	14(100.0)	15(100.0)	23(100.0)	26(100.0)

Notes: same on Appendix. 5.7

Sources: same as Appendix 5.3, 5.4, 5.5 5.5,

Appendix 3.9

Percentage Distribution of Urban Places in 10,001 - 25,000 Population Size - Category, Bangladesh 1951-1981

Regions	1951(%)	1961(%)	1974(%)	1981(%)
1.Chittagong	-	-	1(1.96)	-
2. CHT	-	2(8.33)	2(3.92)	1(6.25)
3. Comilla	-	-	3(5.88)	-
4. Noakhali	1(5.00)	1(4.17)	2(3.92)	-
5. Sylhet	1(5.00)	1(4.17)	4(7.84)	3(18.75)
6. Dhaka	-	2(8.33)	6(11.76)	-
7. Faridpur	2(10.00)	1(4.17)	2(3.92)	1(6.25)
8. Jamalpur	1(5.00)	1(4.17)	-	-
9. Mymensingh	4(20.00)	3(12.5)	3(5.88)	4(25.0)
10.Tangail	1(5.00)	1(4.17)	1(1.96)	-
11. Barisal	1(5.00)	2(8.33)	3(5.88)	-
12. Jessore	1(5.00)	-	3(5.88)	2(12.5)
13. Khulna	1(5.00)	2(8.33)	1(1.96)	-
14. Kushtia	1(5.00)	2(8.33)	6(11.76)	2(12.5)
15. Patuakhal	1(5.00)	1(4.17)	1(1.96)	1(6.25)
16. Bogra	1(5.00)	-	2(3.92)	1(6.25)
17. Dinajpur	-	-	4(7.84)	1(6.25)
18. Pabna	-	1(4.17)	3(5.88)	-
19. Rajshahi	3(15.00)	2(8.33)	2(3.92)	-
20. Rangpur	1(5.00)	2(8.33)	2(3.92)	-
Bengladesh	20(100.00)	24(100.0)	51(100.0)	16(100.0)

Notes: same as Appendix - 3.7

Source: same as Appendix - 3.3, 3.4, 3.5 and 3.6

Appendix 3.10

Percentage Distribution of Urban place in 5,001-10,000 Population Size-Category, Bangladesh, (1951-1981).

Regions	1951(%)	1961(%)	1974(%)	1981(%)
1.Chittagong	1(5.00)	1(4.35)	-	-
2. CHT	1(5.00)	1(4.35)	2(16.67)	-
3. Comilla	-	1(4.35)	-	-
4. Noakhali	1(5.00)	1(4.35)	-	-
5. Sylhet	2(10.00)	2(8.70)	2(16.67)	-
6. Dhaka	1(5.00)	1(4.35)	-	-
7. Faridpur	-	1(4.35)	-	-
8. Jamalpur	-	-	-	-
9. Mymensingh	2(10.00)	2(8.70)	-	-
10.Tangail	-	-	-	-
11. Barisal	2(10.00)	1(4.35)	-	-
12. Jessore	1(5.00)	4(17.39)	2(16.67)	1(100.0)
13. Khulna	2(10.00)	-	-	-
14. Kushtia	2(10.00)	4(17.39)	2(16.67)	-
15. Patuakhali	-	-	-	-
16. Bogra	1(5.00)	1(4.35)	1(8.33)	-
17. Dinajpur	1(5.00)	1(4.35)	2(16.67)	-
18. Pabna	-	-	1(8.33)	-
19. Rajshahi	-	-	-	-
20. Rangpur	3(15.00)	2(8.70)	-	-
Bengladesh	20(100.0)	23(100.0)	12(100.00)	1(100.0)

Notes: same as Appendix 3.7

Sources: same as Appendix 3.3, 3.4, 3.5 and 3.6

Appendix 3.11

Percentage Distribution of Urban Population by Size-Classes in Major Regions of Bangladesh, 1951

Regions	Class I Towns	Class II Towns	Class III Towns	Class IV Towns	Class V Towns	Total Urban Population (in Numbers)
	Percentage of Total Urban Population					
1.Chittagong	98.01	-	-	-	1.99	295,854
2. CHT	-	-	-	-	100.0	6,416
3. Comilla	-	-	100.0	-	-	116,010
4. Noakhali	-	-	-	76.91	23.89	21,657
5. Sylhet	-	-	56.61	18.60	24.89	57,990
6. Dhaka	81.66	-	16.62	-	1.72	411,372
7. Faridpur	-	-	43.88	56.12	-	57,630
8. Jamalpur	-	-	58.26	41.74	-	46,264
9. Mymensingh	-	-	38.99	49.60	11.41	114,209
10.Tangail	-	-	-	100.0	-	21,513
11. Barisal	-	74.43	-	12.10	13.46	119,943
12. Jessore	-	-	-	79.90	20.10	29,871
13. Khulna	-	-	60.51	21.10	18.38	69,781
14. Kushtia	-	-	-	57.67	42.33	36,639
15. Patuakhal	-	-	-	100.0	-	10,279
16. Bogra	-	-	-	77.90	22.10	32,088
17. Dinajpur	-	-	87.13	-	12.90	76,530
18. Pabna	-	-	100.0	-	-	69,469
19. Rajshahi	-	-	46.90	53.10	-	84,569
20. Rangpur	-	47.80	23.90	10.79	17.51	127,642
Bengladesh	34.66	12.11	27.36	18.02	7.84	1805,726

Note: Figures is the parenthes is represents total urban population in numbers.
Source: Same as Appendix 3.3

Appendix 3.12

Percentage Distribution of Urban Population by Size-Classes in Major Regions of Bangladesh, 1961

Regions	Class I Towns	Class II Towns	Class III Towns	Class IV Towns	Class V Towns	Total Urban Population (in Numbers)
	Percentage of Total Urban Population					
1.Chittagong	97.94	-	-	-	2.26	372,632
2. CHT	-	-	-	79.80	20.20	31,764
3. Comilla	-	39.18	57.23	-	3.59	139,125
4. Noakhali	-	-	-	66.94	33.06	29,691
5. Sylhet	-	-	57.01	18.27	24.72	66,202
6. Dhaka	86.96	8.58	-	3.36	1.10	785,540
7. Faridpur	-	-	68.30	20.42	11.27	78,561
8. Jamalpur	-	-	60.38	39.62	-	62,912
9. Mymensingh	-	34.62	20.64	34.54	10.20	153,827
10.Tangail	-	-	-	100.0	-	23,688
11. Barisal	-	66.73	-	25.25	8.02	104,805
12. Jessore	-	-	55.24	-	44.76	71,157
13. Khulna	77.78	-	-	22.22	-	164,537
14. Kushtia	-	-	-	57.84	42.16	63,236
15. Patuakhali	-	-	-	100.0	-	12,325
16. Bogra	-	-	80.29	-	19.71	42,076
17. Dinajpur	-	-	90.22	-	9.78	71,938
18. Pabna	-	-	88.38	11.62	-	99,510
19. Rajshahi	-	47.32	24.73	27.95	-	120,203
20. Rangpur	-	38.02	25.48	24.92	11.58	159,461
Bangladesh	44.30	13.67	20.24	15.01	6.78	2653,190

Note: same as Appendix 3.11

Source: same as Appendix 3.3

Appendix 3.13

Percentage Distribution of Urban Population by Size-Classes in Major Regions of Bangladesh, 1974

Regions	Class I Towns	Class II Towns	Class III Towns	Class IV Towns	Class V Towns	Total Urban Population (in Numbers)
	Percentage of Total Urban Population					
1.Chittagong	98.26	-	-	1.74	-	905,480
2. CHT	-	-	-	65.50	34.50	51,684
3. Comilla	-	81.27	-	18.73	-	246,969
4. Noakhali	-	-	46.83	53.17	-	69,378
5. Sylhet	-	45.14	-	41.75	13.11	131,918
6. Dhaka	86.66	3.00	5.67	4.67	-	2250,505
7. Faridpur	-	-	66.84	33.16	-	114,242
8. Jamalpur	-	62.88	37.12	-	-	95,839
9. Mymensingh	56.20	-	32.63	11.17	-	324,120
10.Tangail	-	47.65	35.89	16.46	-	108,847
11. Barisal	-	63.56	-	36.44	-	154,391
12. Jessore	-	42.16	18.83	31.37	7.63	180,643
13. Khulna	84.05	-	13.15	2.80	-	520,313
14. Kushtia	-	-	47.96	39.87	12.18	151,348
15. Patuakhali	-	-	72.62	27.38	-	37,412
16. Bogra	-	-	57.05	34.20	8.75	82,661
17. Dinajpur	-	54.56	-	35.07	10.37	113,393
18. Pabna	-	63.73	-	31.67	4.60	214,519
19. Rajshahi	53.88	-	32.62	13.50	-	246,666
20. Rangpur	-	62.08	21.92	16.00	-	262,493
Bangladesh	57.36	15.58	12.84	12.68	1.54	6262,821

Note: same as Appendix 3.11

Source: same as Appendix 3.3

Appendix 3.14

Percentage Distribution of Urban Population by Size-Classes in Major Regions of Bangladesh, 1981

Regions	Class I Towns	Class II Towns	Class III Towns	Class IV Towns	Class V Towns	Total Urban Population (in Numbers)
	Percentage of Total Urban Population					
1.Chittagong	97.92	-	2.08	-	-	1421,491
2. CHT	-	-	66.91	33.09	-	54,405
3. Comilla	51.53	48.47	-	-	-	357,358
4. Noakhali	-	66.08	33.92	-	-	194,750
5. Sylhet	66.68	-	9.96	23.35	-	252,490
6. Dhaka	93.98	4.20	2.06	-	-	4081,487
7. Faridpur	-	69.65	20.62	3.73	-	187,372
8. Jamalpur	-	100.0	-	-	-	140,029
9. Mymensingh	47.18	28.63	9.26	14.93	-	404,659
10.Tangail	-	70.96	29.04	-	-	109,243
11. Barisal	65.05	-	34.95	-	-	265,813
12. Jessore	48.51	-	34.85	13.89	2.74	306,982
13. Khulna	84.68	6.83	8.48	-	-	763,252
14. Kushtia	-	80.14	-	19.86	-	188,293
15. Patuakhali	-	-	74.29	25.71	-	64,771
16. Bogra	-	58.74	31.72	9.54	-	117,032
17. Dinajpur	-	64.87	22.40	12.73	-	149,101
18. Pabna	74.95	25.05	-	-	-	287,962
19. Rajshahi	59.61	33.06	7.33	-	-	425,649
20. Rangpur	64,62	-	35.38	-	-	432,981
Bangladesh	73.31	14.87	8.98	2.77	0.08	10215,120

Note: same as Appendix 3.11

Source: same as Appendix 3.3

Appendix 3.15

Number of Towns in Regions (above 5,000 Population) of Bangladesh, 1951-1981

Regions	1951	1961	1974	1981
1. Chittagong	4	5	9	23
2. CHT	-	3	4	13
3. Comilla	3	4	6	19
4. Noakhali	2	3	4	14
5. Sylhet	5	6	7	19
6. Dhaka	5	9	27	37
7. Faridpur	3	4	4	13
8. Jamalpur	2	2	2	8
9. Mymensingh	7	7	8	29
10. Tangail	1	1	3	8
11. Barisal	5	5	4	22
12. Jessore	4	6	6	15
13. Khulna	5	7	5	20
14. Kushtia	4	6	12	13
15. Patuakhali	1	1	2	11
16. Bogra	3	3	4	10
17. Dinajpur	3	3	6	13
18. Pabna	2	3	6	13
19. Rajshahi	4	4	5	17
20. Rangpur	6	6	6	28
Bangladesh	68	89	130	345

Source: Same as Appendix - 3.1 and 3.3

Appendix-4.1a.

Selected Geodemographic and Economic Indices for the 1970's.

	X1	X2	X3	X4	X5	X6	x7	x8	X9	X10	X11	X12	X13
CHITTAGON	7216	6568	4647	4412	14.58	6.92	2.52	45.4	2331	39.1	38	22.9	636
CHT	13181	13160	541	259	0.79	3.08	1.36	67.57	6151	69.69	13.21	17.1	2802
COMILLA	6713	6369	6195	5815	3.77	4.62	0.25	43.9	1524	53.19	19.47	27.33	623
NOAKHALI	5265	3973	3443	4121	1.06	3.08	0.2	40.56	1601	57.33	14.17	28.51	957
SYLHET	12388	12258	5067	2577	2.01	5.38	0.13	46.57	1630	56.18	17.67	26.09	478
DHAKA	7459	6988	8293	6845	37.06	20.77	4.45	45.53	1843	33.32	41.28	25.4	381
FARIDPUR	6913	6340	4322	3939	1.78	3.08	0.24	42.45	1445	62.43	13.07	24.5	517
JAMALPUR	3406	3406	2194	3913	1.61	1.54	0.35	0	1332	61.51	11.04	27.46	0
MYMENSING	9709	9404	8056	3854	4.84	6.15	0.26	45.97	1550	63.83	10.49	25.64	697
TANGAIL	3390	3282	2212	4110	1.66	2.31	0.48	41.46	1637	62.63	12.77	24.6	676
BARISAL	7231	5569	4183	3644	2.35	3.08	0.17	41.38	1448	57.06	12.89	30.05	671
JESSORE	6692	6571	3542	3336	2.75	4.62	0.19	41.13	1523	59.04	14.3	26.66	737
KHULNA	11992	10417	3843	1989	8.74	3.85	2.45	43.2	1812	54.5	20.57	24.93	738
KUSHTIA	3476	3383	2005	3636	2.39	9.23	0.52	42.41	1359	56.17	16.07	27.76	484
PATUAKHAL	4338	3553	1596	2318	0.57	1.54	0.05	42.33	1523	64.38	9.6	26.04	744
BOGRA	3888	3794	2375	3846	1.26	3.08	0.17	44.35	1591	61.74	11.61	26.65	731
DINAJPUR	6757	6711	2737	2551	1.73	4.62	0.18	47.85	1678	62.09	12.33	25.58	885
PABNA	4937	4483	2996	3825	3.27	4.62	1	44.04	1445	58.37	15.49	26.14	575
RAJSHAHI	9461	9324	4545	3025	3.77	3.85	0.3	43.39	1592	60.1	13.71	26.19	830
RANGPUR	9585	9062	5799	3812	4	4.62	0.16	46.05	1544	63.96	11.08	24.96	710
B.DESH	143998	134615	76398	3331	100	100	1	44.34					664

X14	X15	X16	x17	x18	x19	x20
146.58	12.08	12.2	194.02	0.05	30.5	39
156.89	10.86	52.2	43.99	0	20.8	0
139.13	10.14	7.9	33.58	0.09	25.4	49
147.19	12.38	6	30.93	0.06	27.2	16
127.6	11.52	7	36.71	0.07	22.2	15
145.55	11.74	46.2	298.69	0.09	32.3	119
153.09	7.85	5.9	16.47	0.06	21.7	100
0	0	1.2	0	0.03	0	0
167.64	8.43	8.7	20	0.07	18.9	48
167.54	8.21	71.3	21.65	0.03	21.5	7
145.68	10.83	10.3	21.8	0.08	34.5	45
131.48	6.92	13.7	25.49	0.05	26.1	25
121.47	7.09	6.8	67.24	0.07	35.2	37
131.52	7.42	11.4	25.09	0.03	20.2	4
123.66	9.75	2.9	22.87	0.03	30.8	6
153.34	6.83	8.4	55.37	0.03	27.2	11
143.36	7.89	14.1	31.86	0.03	27.3	20
149.81	7.55	18.2	36.78	0.03	19.5	12
130.1	7.88	12.7	28.84	0.05	24.3	37
176.77	6.79	8.6	22.43	0.05	20.9	38
145.51	9.05		69.9		25.8	

Appendix - 4.1b

Percent Share of GDP by Industry in Different Sectors of Economy (Variables X10, X11, X12) in Major Regions of Bangladesh 1977-78 at (c.m.p) (in Million Taka)

		Industrial Sectors					Service Sectors				
	Agricultural Sectors[1] X10	Industry[2]	Construction	Utilities[3]	TSC[4]	Total Industrial Sectors (2+3+4+5) X 11	Trade	Housing	Government	Banking & Insurance	Others[5] Services
	1	2	3	4	5	6	7	8	9	10	11
1.Chittagong	39.10	27.56	3.08	0.39	6.97	38.00	8.95	5.51	1.71	0.96	5.77
2. CHT	69.69	9.87	1.28	0.22	1.85	13.21	11.99	2.26	0.65	0.49	1.71
3. Comilla	53.19	7.18	4.54	0.85	6.90	19.47	8.44	8.11	2.57	1.33	6.89
4. Noakhali	57.33	4.54	4.60	0.21	4.81	14.17	10.60	8.22	2.44	0.86	6.37
5. Sylhet	56.18	6.98	4.36	0.25	6.07	17.67	8.48	7.80	2.40	1.10	6.31
6. Dhaka	33.32	27.36	3.55	0.42	9.96	41.28	7.56	6.34	4.14	1.63	7.73
7. Faridpur	62.43	1.76	4.78	0.17	13.07	1.07	6.96	8.53	2.70	1.07	5.26
8. Jamalpur	61.51	1.58	5.24	0.12	4.11	11.04	9.02	9.38	2.92	0.007	6.13
9. Mymensingh	63.83	1.63	4.54	0.09	4.24	10.49	8.90	8.11	2.53	0.77	5.33
10.Tangail	62.63	3.34	3.97	0.15	5.32	12.77	9.12	7.09	2.39	0.92	5.08
11. Barisal	57.06	1.34	5.13	0.19	6.23	12.89	8.18	9.14	2.69	1.96	8.10
12. Jessore	59.04	4.23	4.10	0.24	5.73	14.30	9.50	7.32	2.57	0.92	6.34
13. Khulna	54.50	9.19	3.79	0.29	7.31	20.57	8.88	6.79	2.18	0.87	6.22
14. Kushtia	56.17	6.92	4.51	0.49	4.14	16.07	8.41	8.09	2.84	1.11	7.33
15.Patuakhali	64.38	1.10	4.49	0.23	3.77	9.60	8.36	8.03	2.38	1.85	5.42
16. Bogra	61.74	2.48	4.45	0.24	4.43	11.61	9.17	7.94	2.48	1.03	6.03
17. Dinajpur	62.09	4.24	4.31	0.17	3.62	12.33	9.76	7.71	2.23	0.73	5.06
18. Pabna	58.37	5.16	4.45	0.26	5.62	15.49	8.28	7.94	2.70	1.17	6.04
19. Rajshahi	60.10	2.69	4.31	0.14	6.57	13.71	9.33	7.72	2.56	0.96	5.63
20. Rangpur	63.96	2.73	4.37	0.14	3.84	11.08	9.04	7.82	2.54	0.72	4.84

Note : 1. Agricultural sectors including Crops, Forestry, Livestock and Fisheries.
2. Industry including large and small scale industry.
3. Utilities including Power, Gas, Water and Sanitary Services.
4. TSC is the Transport Storage and Communication.
5. Other services including professional and miscellaneous services.

Source : BBS, 1983-84.

Appendix-4.2a.

Selected Geodemographic and Economic Indices for the 1980's.

DIST.	x1	x2	x3	x4	x5	x6	x7	x8	x9	x10	x11	x12	x13
CHITTAGON	7216	4621	5491	4939	12.93	6.67	3.02	40.1	4088	30.04	44.21	25.71	1240
CHT	13181	3595	752	383	1.61	3.77	1.25	51.2	9128	64.27	18.55	17.14	6119
COMILLA	6713	6208	6881	6996	4.23	5.51	0.33	36.9	2605	44.39	24.91	30.69	1226
NOAKHALI	5265	4778	3816	4688	3.11	4.06	0.38	34.3	2349	45.57	21.8	32.56	1139
SYLHET	12388	11199	5656	2984	3.74	5.51	0.19	42.4	2828	49.01	21.41	29.57	1462
DHAKA	7459	6387	10014	8992	29.16	10.72	3.65	43.5	3021	24.93	45.51	30.32	824
FARIDPUR	6913	6289	4764	4644	2.5	3.77	0.13	39.1	2368	51.3	18.84	29.86	1281
JAMALPUR	3406	3069	2452	4911	1.62	2.32	0.23	43.6	2216	53.28	16	32.03	1279
MYMENSING	9709	8912	6568	4558	4.98	8.41	0.24	44	2535	56.02	14.14	29.77	1521
TANGAIL	3390	2945	2444	4817	1.4	2.32	0.14	40.4	2624	53.43	17.93	28.64	1506
BARISAL	7231	6068	4667	4289	4.22	6.38	0.32	37.6	2359	47.07	18.81	34.11	1183
JESSORE	6692	6219	4020	4103	3.29	4.35	0.37	42.1	2437	50.06	19.4	30.53	1326
KHULNA	11992	6258	4329	2388	7.33	5.8	2.8	39.3	3087	46.16	25.83	27.96	1482
KUSHTIA	3476	3331	2292	4470	2.52	3.77	0.41	42.6	2356	49.28	18.78	31.88	1260
PATUAKHAL	4338	36491	1843	3020	1.25	3.19	0.22	34.3	2437	57.03	12.84	30.07	1633
BOGRA	3888	3680	2728	4706	1.53	2.9	0.25	41.6	2575	54.56	10.38	30.5	1498
DINAJPUR	6757	6513	3200	3269	2.07	3.77	0.21	43.6	2624	54.33	16.27	29.6	1524
PABNA	4937	4504	3424	4854	3.02	3.77	0.67	42.2	2419	50.59	19.26	30.16	1324
RAJSHAHI	9461	9210	5270	3737	4.12	4.93	0.18	39.2	2395	52.94	16.73	30.32	1363
RANGPUR	9585	9096	6510	4551	5.37	8.12	0.3	43.5	2445	54.75	16.02	29.25	1432
B.DESH.	143998	116552	87120	4059	100	100	1	41	2744				1340

x14	x15	x16	x17	x18	x19	x20
157.65	20.25	24.4	266	0.06	33.8	144
140.11	20.83	82.7	79.62	0.06	26.6	154
171.73	17.5	13.1	39.15	0.09	29.1	178
152.7	18.17	12.1	47.22	0.09	32.5	181
148.26	15.42	20.4	54.6	0.08	23.6	104
145.59	21.25	59.4	525.75	0.06	37.8	276
156.37	14.08	12.7	20.9	0.09	26.2	131
171.86	14.83	8.5	22.25	0.09	18.1	175
177.23	13.5	7.7	29.36	0.08	21.5	143
193.84	15.5	36.6	20.91	0.09	25.3	235
138.03	15.83	15.4	37.83	0.12	40.4	202
142.69	12.92	17.6	50.42	0.09	29.5	167
126.03	15.17	19	115.18	0.12	30.3	239
141.67	12.92	17.8	63.83	0.07	37.5	142
132.39	14.83	18.4	22.12	0.13	37.6	230
166.57	12.08	7.4	77.1	0.08	28.3	208
143.61	11.83	16	44.77	0.07	27.4	129
154.12	14.67	10.2	42.91	0.08	24.3	319
127.15	15.67	27.1	42.36	0.07	26	192
184.95	15.17	20.7	36.93	0.06	22	179
153.86	15.48	22.5	114.68		29.2	

Appendix -4.2b

Percent Share of GDP by Industry in Different Sectors of Economy (Variables X10, X11, X12) in Major Regions of Bangladesh 1981-82 at (c.m.p) (in Million Taka)

		Industrial Sectors					Service Sectors				
	Agricultural Sectors[1]	Industry[2]	Construction	Utilities[3]	TSC[4]	Total Industrial Sector (2+3+4+5)	Trade Services	Housing Service	Government Services	Banking & Insurance	Others Services[5]
	X10					X11					
	1	2	3	4	5	6	7	8	9	10	11
1.Chittagong	30.04	31.96	4.17	0.38	7.70	44.21	9.29	5.15	3.6	1.27	6.4
2. CHT	64.27	8.88	1.73	0.18	7.76	18.55	10.97	2.13	2.3	0.64	1.1
3. Comilla	44.39	7.14	6.42	1.62	9.73	24.91	7.72	7.92	4.2	1.85	9.0
4. Noakhali	45.57	5.16	7.54	0.22	8.88	21.80	7.60	9.31	6.4	1.45	7.8
5. Sylhet	49.01	6.75	6.09	0.26	8.31	21.41	8.35	7.51	4.3	1.71	7.7
6. Dhaka	24.93	25.81	4.91	0.47	14.32	45.51	7.60	6.06	8.8	2.26	5.6
7. Faridpur	51.30	2.00	7.03	0.17	9.64	18.84	7.98	8.68	4.8	1.60	6.8
8. Jamalpur	53.28	1.62	7.62	0.11	6.65	16.00	8.23	9.41	4.2	1.39	8.8
9.Mymensingh	56.02	2.06	6.68	0.09	5.31	14.14	8.70	8.25	2.8	1.42	8.6
10.Tangail	53.43	3.41	6.01	0.14	8.37	17.93	8.51	7.42	5.5	1.51	5.7
11. Barisal	47.07	1.33	7.46	0.21	9.81	18.81	7.25	9.21	6.3	2.05	9.3
12. Jessore	50.06	4.38	6.21	0.28	8.53	19.40	8.15	7.66	4.8	1.42	8.5
13. Khulna	46.16	9.68	5.38	0.32	10.45	25.83	8.36	6.64	5.4	1.26	6.3
14. Kushtia	49.28	6.66	6.37	0.43	5.32	18.78	8.36	7.87	6.3	1.55	7.8
15.Patuakkhali	57.03	1.03	6.34	0.16	5.31	12.84	8.69	7.83	6.1	2.65	4.8
16. Bogra	54.56	1.94	1.94	0.20	6.30	10.38	8.47	8.06	7.2	1.57	5.2
17.Dinajpur	54.33	4.40	6.45	0.19	5.23	16.27	8.81	7.96	5.2	1.53	6.1
18. Pabna	50.59	5.64	6.32	0.28	7.02	19.26	8.43	7.80	5.2	1.53	7.2
19. Rajshahi	52.94	2.58	6.53	0.16	7.46	16.73	8.31	8.06	6.5	1.65	5.8
20. Rangpur	54.75	2.85	6.70	0.14	6.33	16.02	8.63	8.26	5.0	1.16	6.2

Note : 1. Agricultural sectors including Crops, Forestry, Livestock and Fisheries.
2. Industry including large and small scale industry.
3. Utilities including Power, Gas, Water and Sanitary Services.
4. TSC is the Transport Storage and Communication.
5. Other services including professional and miscellaneous services.

Source: B.B.S, 1984-85

APPENDIX - 5.1

Values of mod. t with a probability of being exceeded in random sampling
v=number of degrees of freedom

	Level of Significance				
d. f.	0·50	0·10	0·05	0·02	0 01
1.	1·000	6·31	12·71	31·82	63 66
2.	0·816	2·92	4·30	6·97	9·92
3.	0·765	2·35	3·18	4·54	5·34
4.	0·741	2·13	2·78	3·75	4·60
5.	0·727	2·02	2·57	3·37	4·03
6.	0·718	1·94	2·45	3·14	3·71
7.	0·711	1·90	2·36	3·00	3·50
8.	0·706	1·86	2·31	2·90	3·36
9.	0·703	1·83	2·26	2·82	3·25
10.	0·700	1·81	2·23	2·76	3·17
11.	0·697	1·80	2·20	2·72	3·11
12.	0·695	1·78	2·18	2·68	3·06
13.	0·694	1·77	2·16	2·65	3·01
14.	0·692	1·76	2·14	2·62	2·98
15.	0·691	1·75	2·13	2·60	2·95
16.	0·690	1·75	2·12	2·58	2·92
17.	0·689	1·74	2·11	2 57	2·90
18.	0·688	1·73	2·10	2·58	2·88
19.	0·688	1·73	2·09	2·54	2·86
20.	0·687	1 73	2·09	2·53	2·85
21.	0·686	1·72	2·08	2·52	2·83
22.	0·686	1·72	2·07	2·51	2·82
23.	0·685	1·71	2·07	2·50	2·81
24.	0·685	1·71	2·06	2·49	2·80
25.	0·684	1·71	2·05	2·40	2·79
26.	0·784	1·71	2·06	2·48	2·78
27.	0·684	1·70	2·05	2·47	2·77
28.	0·683	1·70	2·05	2·47	2·76
29.	0·683	1·70	2·04	2·46	2·76
30.	0·683	1·70	2·04	2·45	2·75
35.	0·682	1·69	2·03	2·44	2·72
40.	0·681	1·68	2·02	2·42	2·71
45	0·680	1·68	2·02	2·41	2·69
50.	0·679	1·68	2·01	2·40	2·68
60.	0·678	1·67	2·00	2·35	2·66
00.	0·674	1·64	1 96	2·33	2.58

Source: Aslam Mahmood, "Statistical Methods in Geographical Studies", Rajesh Publications, New Delhi, 1977, P. 169.

BIBLIOGRAPHY

BIBLIOGRAPHY

Abraham W.I. (1984), "Manufacturing Output and the Industrial Production Index", Industrial Statistics Improvement Unit, Dhaka, (mimeographed) and World Bank", Bangladesh: Recent Economic Developments and Medium Term Prospects", Vol.I, March, 1986.

Ahmad Aijazuddin (1992), "Natural Resource System: Regional Development and Disparirites," in The Green Age, vol.I, No.2, Oct-Dec. 1992, p.7.

Alam Khurshid, and Salma A.Shafi (1990), "Urbanization Process in Bangladesh and the Challenges", Journal of Bangladesh Institute of Planners, Dhaka, Vol.1, Nos.1 & 2, p. 73-81.

Alamgir M. (1973), "Problems of Urbanization in Bangladesh", Dhaka: Bangladesh Institute of Development Studies (Mimeo).

Alamgir M. 1975, "Approaches Towards Research Methodology on Problems of Urbanization in Bangladesh", Research Report No. 15, BIDS, Dhaka.

Alamgir M. and L. Berlage (1974), "An Analysis of National Accounts of Bangladesh 1949/50 - 1968/69", New Series No. 7. Bangladesh Institute of Development Economics, Dhaka.

Alamgir Mohiuddin (1975), "Poverty, Inequality and Social Welfare : Measurement, Evidence and Politics", The Bangladesh Development Studies, April 1975, p.171.

Alam Shamsul (1987), "Urbanization and Spatial Development in Bangladesh", The Rajshahi University Studies (Part B) XV: 123-136.

Alden Jermy, and Robert Morgan (1974),"Regional Planning: A Comprehensive View," Leonard Hill Books an Intentext Publisher, [J.Friedmann, "An Information Model of Urbanisation", Urban Affairs Quarterly, Vol. IV, No. 1968.]

Andrews F.M. (1973), "Social Indicators and Socio-Economic Development", Journal of Development Areas, Vol.8.

Bangladesh Bureau of Statistics (BBS), 1991, Population Census of Bangladesh (Preliminary Report), Dhaka: Government of Bangladesh, Dhaka.

Bangladesh Bureau of Statistics (BBS), 1986, Government of Bangladesh, p.156, Table 2.76.

Barts G.H. and J.L.Stein (1968), "Regional Growth and Maturity in the United States : A Study of Regional Structural Change" in L.Needham (ed.), Regional Analysis - Selected Readings, England: Penguin Books, pp. 159-197.

Bawa, Vasant Kumar, (1985), "Indian Metropolis: Urbanization, Planning & Management", Inter-India Publications, New Delhi, India, p.31.

Berger C.P. Kindle (1952), "Review of the Economy of Turkey: The Economic Development of Guatemala; Report on Cuba". Review of Economics and Statistics, Vol. 34, No. 4 (November, 1952).

Berry B.J.L. (1960), "An Inductive Approach to the Regionalisation of Economic Development", Ginsburg, N. (ed.) Essays on Geography and Economic Development".

Berry B.J.L.,(1961), "City Size Distribution and Economic Development", in Economic Development and Cultural Change, IX, July 1961, p. 575.

Berry B.J.L., (1962), "Same Relation of Urbanization and Basic Pattern of Economic Development", in F.R. Bryec (ed.) 1962, Urban Systems and Economic Development, 12 Eugene Oregon, 962.

Bose Ashish (1982), "The Role of Medium-Size Cities in the Urbanization Process". Economic and Social Commission for Asia and the Pacific, Third Asian and Pacific Population Conference, 20-29 September, 1982, Colombo, pp.5-6

Breese Gerald (1966), "Urbanization in Newly Developing Countries", Prentice Hall, New York.

Breese G. (1969), Urbanization in the Newly Developing Countries, New Delhi, 1969, p. 3.

Brutzkus Eliezer, "Centralized Versus Decentralized Pattern of Urbanization in Developing Countries: An attempt to elucidate a Guideline Principle. Economic Development and Cultural Change, 23 (July): 633-52.

Cant R.G. (1975), "Territorial Socio-Economic Indicators in Development Plans in the Asian Region, International Social Science Journal, Vol.27.

Chadwick (1987), "Models of Urban and Regional Systems in Developing Countries" - Some Theories and their Applications in Physical Planning, P. 32.

Chowdhury R.H.(1980)and (1987), "Urbanization in Bangladesh, Centre for Studies, Department of Geography, Dhaka

University, Dhaka.

Chowdhury Rafiqul Huda (1980), "Urbanization in Bangladesh" Centre for Urban Studies, Development of Geography, University of Dhaka, P. 31-32.

Chowdhury Uma Datta Roy (1992), "Inter-State and Intra-State variations in Economic Development and Standard of Living", EPW, December 5-12, 1992.

Clark C. (1940 & 1957), "The Conditions of Economic Progress" London: Macmillan, 1957; First and Second Edition.

Coates B.E.et.al., (1977), "Geography and Inequality", London, Oxford University Press.

Davis Kingsley (1949), "World Urbanization 1950-1970, Vol. I. Basic data for Cities, Countries and Regions" Berkeley, Institute of International Studies, University of California.

Davis Kingsley , and H.H. Golden, (1954), "Urbanization and the Development of Pre-Industrial Areas", Economic Development and Cultural Change, 3, pp.6-26.

Davis. Kingsley (1972) , "The Urbanization of the Human Population", C.F. Breeze, Gerald, The City in Newly Developing Countries, Prentice Hall International Inc. London., 1972, p.7.

Dunford M.F. (1988), "Capital, the State and Regional Development, Pion Ltd., London, pp. 1-10.

Elahi Maudood (1972), "Urbanization in Bangladesh: A Geo-demographic Study", in Oriental Geographer, Vol.16, 1972.

Elahi K.Maudood (1993), "Evolution of Population in Bangladesh: A Spatio-Temporal Study", in International Symposium on Population Growth in Developing Countries, CSRD, Jawaharlal Nehru University, New Delhi, 20-24, December 1993, India, p. 2.

El-Shaks, S. (1972), "Development, Primacy and Systems of Cities", Journal of Developing Areas, 7, p.11-36.

ESCAP - UN, (1989), Economic and Social Survey of Asia and the Pacific, ESCAP/UN, Bangkok, Thailand, 1990, p.82.

Fanon F.(1967), "The Wretched of the Earth", Penguin Books.

Fisher A.G.B. (1933), "Capital and Growth of Knowledge", Economic Journal, 43 pp. 374-89.

Florence P.Sargent (1929), Political and Economic Planning. Report on Location of Industry, London, p.287. The index most commonly used to identify the urban economic base, is simple ratio of an industry's share of local employment relative to the industry's share of national employment.

Ginsburg N. (1961), "Atlas of Economic Development", Chicago University of Chicago Press.

Government of Bangladesh, The Second Five Year Plan 1980-85, Planning Commission, pp. 1-7.

Government of Bangladesh (1986), "Statistical Year Book of Bangladesh, BBS 1986, p.4

Gostkowski, (1974), "Toward a System of Human Resources Indicators for Less Developed Countries,", Warsaw, Institute of Philosophy and Psychology, Polish Academy of Sciences.

Government of Pakistan, 1951, Census of Pakistan, 1951, East Pakistan, 1951, East Pakistan Tables & Report, Home Affairs (Ministry of Home & Kashmir Affairs), Karachi.

Government of Pakistan (1951), Census of Pakistan, 1951, Vol. 3: East Bengal: Karachi, Ministry of Home Affairs.

Haque, M.M. (1992), "An Overview of Urban Land Management in Bangladesh, in Islam, N and Chowdhuri, A.I.(eds.) 1992.

Haque Chowdhury Emdadul (1985), "Labour Force and Development: " A Regional Perspective on Bangladesh", Population Studies Centre, Jahangirnagar University, Dhaka.

Harris C.D. and E.L.Ullmann (1945), "The Nature of Cities" in Annals of American Academy of Political and Social Science, XLII, Nov., pp. 7-17.

Harvey D., (1975) "The Political Economy of Urbanization in Advanced Capitalist Societies: The Case of the United States; in G. Gappert and H. Rose (eds.) The Social Economy of Cities, Urban Affairs, Annual Reviews, I. Beverly Hills, Sage Publications.

Hirchman A.D. (1961), "The Strategy of Economic Development", New Haven, Yale University Press.

Hoselitz, B.F. (1955), "Generative and Parasitic Cities", in Economic Development and Cultural Change, III April.

Hossain M. (1980), "Foodgrains Production in Bangladesh: Performance, Potential and Constraints", The Bangladesh Development Studies, Winter and Summer, 1980, p. 58.

Hueting R., (1986) New Scarcity and Economic Growth, Amsterdam, North Holland, 1980, and R. Hueting. "An Economic Scenario for a Conservero Economy" in Ekins, 1986.

IMF (1991), International Financial Statistics, October, p.41.

Islam Nazrul (1974). "The State and Prospects of the Bangladesh Economy", in B.A. Robinson and Griffith (eds.), The Economic Development of Bangladesh with a Socialist Framework, London, p.1.

Islam R. (ed : 1986), "Bangladesh : Selected Issues in Employment and Development",

Islam Nazrul (1992), "Urban Environment and Future Strategies for Urban Development," in K.M. Elahi, A.H.M.R. Sharif and A.K.M.A. Kalam, (eds.) Bangladesh:Geography Environment and Development, Dhaka: BNGA.

Jackobson Leo, and Ved Prakash (1971), "Urbanization and Urban Development: Proposals for an Integrated Policy Base, in Leo Jackson and Ved Prakash (eds) Urbanization and National Development, Sage Publications, Beverly Hills, California, 1971.

Jhingan M.L.(1976),"The Economics of Development and Planning, Vikas Publishing House Pvt. Ltd., New Delhi, p. 75.(1976)

Kendall, M.G. (1939) : "The Geographical Distribution of Crop Productivity in England"; Journal of Royal Statistical Society, No.106, 21 (1939).

Khan, A.R. (1977), "Poverty and Inequality in Rural Bangladesh", in ILO Poverty and Landlessness in Rural Asia, Geneva.

Khan Azizur Rahman and Mahabub Hussain (1989), "The Strategy of Development in Bangladesh", Macmillan, OECD Development Centre, 1989, p.22.

Khan M. Moazzem Hossian (1989), "Urbanization in Bangladesh: A Socio-Economic Analysis," Journal of the Bangladesh National Geographical Association, 1989 Vol. 17, Nos. 1&2, BNGA, pp.125-143.

Kundu, Amitabh (1980), Measurement of Urban Process - A Study of Regionalisation, Popular Prakashan, Bombay.

Kundu Amitabh and Moonis Raza (1982), "Indian Economy : The Regional Dimension", JNU, New Delhi.

Kundu Amitabh and R.K. Sharma (1983), "Industrialisation, Urbanization and Economic Development in India - The Need for Alternate Explanation", Urban India (Forthcoming)

Kuznets S. (1959), "Six Lectures on Economic Growth" (Glencoe, Illinois: Free Press).

Lampard, E.E. (1955), "The History of Cities in the Economically Advanced Areas", Economic Development and Cultural Change.

Lampard Eric E.(1965), "Historical Aspects of Urbanization" in P.M. Hauser and L.F. Schnore (eds.), The Study of Urbanization, New York, 1965., p. 521.

Lapple D., P. Van Hoogstraten, (1980), "Remarks on the Spatial Structure of Capitalist Development: The Case of the Netherlands", in Regions in Crisis. New Perspectives in European Regional Theory Eds. J Carney, R. Hudson, J. Lewis, (Croom Helm, Beekenham, Kent), pp. 117-166.

Lee R. , (1983), "Development, in Johnson, R.J (ed.), "The Dictionary of Human Geography, England, Blackwell.

Lipton. M. (1977), "Why Poor People Stay Poor : Urban Bias in World Bias in World Development", London, Monwarice Temple, Smith.

Mahmood Aslam (1977), "Statistical Methods in Geographical Studies,", Rajesh Publications, New Delhi, PP. 53-55.

Mahto Kailash (1985), "Population Mobility and Economic Development in Eastern India," Inter-India Publications, Delhi.

McGee T.G. (1971), "The Urbanization Process in the Third World: Exploration in Search of a Theory", London, G. Bell.

Mead J.E. (1952), 'External Economics and Diseconomies in a Competitive Situation', Economic Journal, 62, pp.54-97.

Mills Edwin S. and Charles M. Beckar (1986), "Studies in Indian Urban Development", Oxford University Press, New York, U.S.A.

Misra R.P. (1978), "Million Cities of India," Vikas Publishing Home Private Limited, New Delhi, 1978.

Misra R.P. (1984), "Development Issues of Our Time", Concept Publishing Company, New Delhi pp. 34-65.

Misra R.P. and Nguyen Tri Dung (1984), "Large Cities : Growth Dynamics and Emerging Problems, in Development Issues of Our Time, R.P. Misra edited, Concept Publishing Company, New Delhi, 1984.

Mohit Mohammad A (1989), "Regional Development & Urban Growth in Bangladesh: A case for Small and Medium Town Development" Journal of the Bangladesh National Geographical Association, 1989, Vol. 17, Nos. 1&2. BNGA, Dhaka. pp. 125-143.

Mondal A.H. (1989), "The Pattern of Industrial Location and its Determinants in Bangladesh, Bangladesh Institute of Development Studies (BIDS), Dhaka, Research Report No.114, p.9 and p.11-12, Table-1,2 and 3.

Mukherji I.N. (1982), "Domestic Conflicts in South Asia", Economic and Ethnic Dimensions in U.Phadnis, Bahdur,Muni, edited,JNU, p.2, 15 (Table - 1).

Mukherji I.N. (1986), "Economic Growth and Social Justice in South Asia: Growing Potential for Domestic Conflicts", in Domestic Conflicts in South Asia, Urmila Phadnis, S.D. Muni, Kalim Bahadur edited, Economic and Ethnic Dimensions, South Asian Publishers, New Delhi, pp. 1-2.

Okun B. and R.W. Richardson (1964), "Regional Income Inequality and Internal Population Migration", in J. Friedmann and W. Alonso, (eds.), Regional Development and Planning - A Reader, Cambridge, Mass: MIT Press, pp. 303-318.

Osmani S.R. (1985) "Some Aspects of Public Policy for Agricultural Development in Bangladesh," Research Paper for BEA, Dhaka and IFPRI, Washington in Dhaka, 11 February; and M.A. Rahman (1984), "Process of Skill Formation in Non-formal Sector: A Case Study in Bangladesh", ILO Project on "Strengthening of Manpower and Employment Programmes," Dhaka (mimeo)

Pandit, Miss Surekha (1986), "Urbanization: The Indian Way", Concepts' International Series in Geography, No. 3, Concept Publishing Company, New Delhi, India, p. 289.

Patel A.M. (1970), "The Urban Centres of Each Pakistan", Oriental Geographer, Vol 14.

Patnaik S.C. (1987), "The Concept and Strategy of Sub - National Planning", in Angrish, A.C.(ed.) Regional

Economic Planning in India, 1987, p.2.

Pirenne, Henri (1925), "Medieval Cities", Princeton: Princeton University Press.

Pore Kumud (1987), "Strategy of Regional Planning : Experience in Maharastra" in Regional Economic Planning in India, A.C. Angrish (ed.), Twenty-First Century Publishers, Meerut, 1987, Chapter-7, p.70.

Pramanik A.H. (1982), Development Through Urban Bias Public Expenditure : An Empirical Study of Bangladesh, Dhaka : Dhaka University Centre for Social Studies.

Pray C.E. , (1980), "An Assessment of the Accuracy of the Official Agricultural Statistics of Bangladesh", The Bangladesh Development Studies, Winter & Summer 1980.

Rahman Atiq and Chowdhury Saleh Ahmad, (1989),"A Study on the Impact on Public Investment on Output and Employment in Bangladesh", Bangladesh Institute of Development Studies (BIDS) Dhaka, May 1989, Table -16, pp. 15-19.

Ramachandran, R (1989), "Urbanization and Urban Systems in India", Oxford University Press, Delhi, pp.126, 128-129.

Rao Hemlata (1987), "Strategy for Developing Micro-Regions : An Exploratory Exercise", in Regional Economic Planning in India, A.C. Angrish (ed.), Twenty-First Century Publishers, Meerut, 1987.

"Report of the National Commission on Urbanization (1988), Research Study Report by Prof. B. Mishra, School fo Planning and Architecture, New Delhi,1988, August, Vol.V, p.98.

'Report of the Task Forces on Bangladesh Development Strategies for the 1990's, in Developing the Infrastructure, vol.3, University Press Ltd, 1991, Dhaka.

Rostow, W.W. (1960), "The Stages of Economic Growth: A Non-Comunist Manifesto", Cambridge: Cambridge University Press.

Rumi Syed Rafiqul Alam, (1989), "Role and Characteristics of Small Towns in Regional Development of Bangladesh", Journal of the Bangladesh National Geographical Association, 1989, Vol. 17, Nos, 1&2, BNGA,Dhaka, pp.158-165.

Saleheen Mesbah-US, Sharif A.H.M. Raihan and Huq Sheikh Md. Monzurul (1990), "Rural-Urban Migration and

Urbanization in Bangladesh", in Bui Dang Ha Doah, edited Urbanization and Geographical Distribution of Population Proceedings of the Project Initiating Meeting, Pusan Korea, 29 September 30 October 1989, Social Survey Research Centre, Pusan National University and Committee for International Cooperation in National Research in Demography (CICRED), 1990, P. 61.

Saleheen, Mesbah-US and Sharif, Raihan (1988), "Urbanization and Problems of Future Urban Growth in Bangladesh" in the Futures of Development (Selections from the 10th World Conference of the World Futures Studies Federations, Beijing. People's Republic of China, 3-8 Sept. 1988, Future Oriented Studies Programmes, August, 1991.

Santos M. (1977), "Planning Underdevelopment", Antidote. Vol. 9. No. 3, 1977, pp. 86-97.

Sharma N. (1972), "Degree of Urbanization and Level of Economic Development in Chotanagpur : A Study in Nature of Relationship" in Indian Journal of Regional Science, Vol.IV, No.2, p.143, pp.142-153.

Shahi U.P.(1989), Urbanization in Gujarat: A Geographical Analysis, in Jagadish Singh edited, Institute for Rural Economic Development, India, 1989, p. 4.

Sharif A.H.M.R. (1992), "Regional Structure of Development in Bangladesh", in K.M. Elahi, A.H.M.R. Sharif, and A.K.M.A. Kalam (eds.) Bangladesh: Geography, Environment and Development, Dhaka: BNGA.

Singh, Mahinder Santokh (1980), "Third World Geographical Studies: The Dependency Paradigm", in collection of Working Papers 1, University Kebangsaan Malaysia, "Geography and the Third World" ed. by Ismail Ahmed and Jamaluddin Md. Jahi (1987), International Seminar 14 - 18th May 1980, Kuala Lumpur, Malaysia.

Sita K. and K. Seeta Prabhu (1989),"Levels of Development and migration: Case of South Konkan," EPW, January 7, 1989.

Slater D. (1977), "Geography and Underdevelopment", Antipode, vol. 9, no.3, pp. 1-21.

Smith D. Drakakis (edited, 1990), "Economic Growth and Urbanization in Developing Areas", for the IGU Commission on Third World Development, London.

Sobhan R. and Muzaffar Ahmad (1980), Public Enterprise in an

Intermediate Regime. BIDS, Dhaka

Sultana Sabiha (1993), "The Growth of Urban Population and Urbanization in Bangladesh," Institutional Symposium Paper on Population Growth in Developing Countries, New Delhi, 20-24 December.

Sultana Sabiha , (1993) "Rural Settlements in Bangladesh - Spatial pattern and Development", Graphosman, Dhaka, p.30, 109-116.

Sydney Siegel (1956), "Non-Parametric Statistics for the Behavioural Sciences, McGraw Hill Book Co. Inc., Kogakusha Co. Ltd., Tokyo, p. 212.

Thirlwall A.P. (1989), "Growth and Development", with Special reference to developing countries, 4th Editor, Macmillan Education Ltd., p.9.

Tripathy Kamala Kanta (1993), "Population and Development: An Economic Perspective", Manak Publications Pvt. Ltd., New Delhi.

United Nations (1948), Demographic Yearbook, New York, United nations, 1949.

United Nations (1952), Demographic Yearbook, New York, United Nations, 1953.

United Nations (1989). Statistical Year Book for Asia and the Pacific, ESCAP, Bangkok, Thailand, UN Publications Sales No.F/F.86.II/F.24

United Nations (1989),and Development, Geographical Distribution of Financial Flows to Developing Countries, Urban Issues in Statistical Year Book for Asia and the Pacific, ESCAP, Bangkok, Thailand, P.35 and 44.

UN/ESCAP (1989), Economic and Social Survey of Asia and the Pacific, (Economic and Social Commission for Asia and the Pacific, Thailand), p.33, p.160.

United Nations (1968), "Urbanization and Economic and Social Change: An Explanatory Demographic Investigation, International Social Development Review, P. 1, 21-35.

Victor F.S. Sit , "Urbanization and Development: A New Policy Perspective," in Chatterji (Manas) and others, (eds), Spatial, Environmental and Resource Policy in Developing Countries, Gower Publishing Co. Ltd., England, p.107.

Vylder S.D., and D. Asphund, (1979), Contradictions and Distortions in a Rural Economy : The Case of

Bangladesh, Dhaka : SIDA Report.

Weber A. (1929), "Alfred Weber's Theory of the Location of Industries" (Chicago: Chicago University Press).

Welber Adna, F. (1899), The Growth of Cities in the Nineteenth Century", New York Copumbia University Studies in History , Economics and Public Law, 1899.

Wellisz Stanislan H. (1971), "Economic Development and Urbanization" in Leo Jakobson and Ved Prakash edited in Urbanization and National Development, vol.I, South and Southeast Asia Urban Affairs Annuals, Sage Publications, Beverly Hills, California, Chapter.2, p.39.

Williamson J.B. (1965), "Regional Inequality and the Process of National Development: A Description of Patterns", Economic Development and Cultural Change, July 1965.

Williamson J.G. (1978), "Regional Inequalities and the Process of National Development: A Discription of the Patterns", in J. Friedmann and W. Alonso, (eds.), Regional Policy -Readings in Theory and Applications, Cambridge, Mass: MIT Press, pp. 158-200.

Wilson, R.K. (1973), "Socio-Economic Indicators Applied to Sub-Districts of Papua and New Guinea", Discussion Paper No.1, Melbourne, Economic Geography Department, Melbourne University.

Wishwakarma R.K. (1981), "Urban and Regional Planning Policy in India, New Delhi, Uppal Publishing Home.

World Commission (1987), "Our Common Future", Oxford University Press, London, p.20-21, 82.

World Bank (1974), "Bangladesh: Development in a Rural Economy," Vol.1, The Main Report, Washington.

World Bank (1985), "Bangladesh Economic and Social Development Prospects", Vol.III (Report No.5409), Washington, D.C., U.S.A.