THE UNIVERSITY OF MANITOBA

PATTERNS, STRUCTURE AND GROWTH OF THE LABOUR FORCE IN BANGLADESH: A SPATIAL AND TEMPORAL ANALYSIS

by

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ABSTRACT

The purpose of this thesis is to examine the patterns, structure and growth of the labour force in Bangladesh from a geo-demographic perspective. The objectives of this study are to address the following specific areas: (i) to determine the size of the labour force on a longitudinal basis in relation to population size; (ii) to analyse patterns of spatial distribution and concentration of labour force participation on a cross-sectional basis; (iii) to analyse the patterns and dynamics of regional variation in labour force structure in a temporal perspective; and (iv) to assess some of the policy issues and planning implications emerging from the foregoing analysis.

In the light of dependency theory, this study focuses primarily on the examination of patterns and processes of economic activities, both national and regional, in relation to the process of economic development in underdeveloped countries, particularly in Bangladesh. The findings of this study indicate that, unlike developed countries, Bangladesh experienced a constant rate of participation in the agricultural sector since 1901, involving more than 80 percent of the total labour force. The proportion of the industrial labour force has declined; in contrast, the service sector participation rates have been increasing at a rapid pace. Overall participation in the labour force has involved less than one-third of total population in Bangladesh since the beginning of the century.

On the surface, the unprecedented demographic growth has been the prime determinant for such a pattern, but the underlying factor appears to be the colonial exploitation up to 1947, and semi-colonial

domination until 1971 over the territory now comprising Bangladesh.

It is also found that favourable factors for economic growth and development are being concentrated in growth regions at the expense of backward peripheral regions over time. The projections for the various economic sectors indicate an increasing imbalance in the sectoral as well as regional distribution of economic activities in future decades. Policy formulations for balanced regional planning are suggested.

"That the demand for men, like that for any other commodity, necessarily regulates the production of man; quicken it when it goes too slowly, and stops it when advances too fast"

(Adam Smith, 1828. 'An Inquiry into the Nature and Causes of the Wealth of Nations', J.R. MCullaoch (ed.), First Edition, Vol. I:133).

DEDICATION

This thesis is dedicated to

the labour force of Bangladesh.

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C.E.H.

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CHAPTER 1

INTRODUCTION: LABOUR FORCE AND REGIONAL DEVELOPMENT

The Problem and Purposes of the Study

Bangladesh has long been of interest to demographers and geographers because of its precarious economic conditions and overwhelming population density and growth. The country represents a composite picture of all the extremes of poverty and underdevelopment[1] of Third World countries. Demographic conditions are so extreme that 87.05 million[2] people are crowded into 55,126 square miles, and over 90 percent live in the rural areas. This makes Bangladesh the most densely populated rural country in the world. Moreover, the population growth rate is 2.6 percent per annum and this will double the present population size in 27 years.

Socio-economic conditions are also extreme. Per capita incomes are among the lowest in the world. More than 50 percent of the population is under 15 years of age and only one quarter of the total population is in the labour force. Less than 15 percent of the adult population have five or more years of schooling. Farm holdings are small and fragmented (about 0.33 acres of cultivated land per capita), and with a growing proportion (more than 40 percent) of rural landless households, the country has been experiencing deficiency in food production over the last two decades.

Major efforts in population research in Bangladesh have been mainly in the area of population growth components such as fertility patterns and behaviour, their interrelations with social phenomena and dynamics, and population composition and prospective growth.[3] From a

development[4] perspective, the most vital and essential aspect of population is manpower structure and its process of utilization. This theme has largely been ignored in Bangladesh studies. Whatever nominal attempts were made, they were directed at village level micro-studies or a nominal aggregate structure of manpower. Available micro-level studies (Islam, 1964; Habibullah, 1962; Farouk and Ali, 1977; Cain, 1977) deal with the extent and pattern of labour utilization at the village level, and national aggregate studies (International Labour Office, 1962; Farooq, 1968; Huq, 1978; Ali, 1980) have focussed upon total national structures. In contrast, this writer believes that there have not been any comprehensive studies of labour force structure in Bangladesh from a regional perspective. The present study therefore attempts to fill a gap in the understanding of patterns and processes, both in retrospect and prospect, of the labour force in Bangladesh, with special emphasis on its spatial distribution, variation, and composition. Further, using a historical-structural approach, the study intends to make some tentative generalizations about the structure of the labour force *per se*, and its interrelations with socio-economic variables and the development process in Bangladesh.

In brief, the study objectives are to address the following specific problem areas:

(i) to determine the size of the labour force on a longitudinal basis in relation to population size;

(ii) to analyse patterns of spatial distribution and concentration of labour force participation rates on a cross-sectional basis;

(iii) to analyse the patterns and dynamics of regional variations in labour force structure in a temporal perspective; and

(iv) to project and analyse some of the policy issues and planning implications emerging from the foregoing analyses.

It is hoped that this study of the patterns of labour force structure and its growth in Bangladesh will provide an indication of the general demographic and socio-economic characteristics of Third World countries. This study will also be of utility in formulating manpower and development planning strategies for Bangladesh.

Theoretical Issues and Considerations

The problems stated above may be viewed in the context of two issues concerning general economic and regional development. Firstly, the study may contribute to the study of structural form in Third World countries in general and in Bangladesh in particular. Secondly, it is an examination of regional disparities which exist in terms of population-employment distribution within an underdeveloped country.

Development issues and theories have long been considered as one of the main areas of inquiry in the social sciences, particularly in classical and neo-classical economics (Weber, 1929; Harrod, 1939; Mean, 1952). Major analyses in these studies have been centered around the issues of labour force. The "development stages theory of growth" is one of the pioneer concepts in this area (Fisher, 1933; Clark, 1940, 1957; Kuznets, 1959; Rostow, 1960). It postulates that all societies progress along a sequential path of economic growth[5] and development. Societies are assumed to experience changes in the dominant occupation of their labour force in sequential stages—from primary through secondary to tertiary. According to this point of view, during the

initial stages of economic development agriculture dominates the occupational structure and the sources of income. The societies are assumed to be largely self-sufficient. With increasing trade and transportation facilities, there is a shift from dependence upon subsistance agriculture to commercial and specialized agriculture. With continued economic growth, manufacturing and industrial specialization replaces agriculture, and finally, as development continues, a tertiary or service economy becomes dominant.

Based upon empirical evidence from the developed countries of the Western World, Clark (1940:7-9) generalized that an average high per-capita real income is always associated with a high proportion of population engaged in the tertiary sector. He summarized that:

> "When we examine the trend through time, we find a similar result. In every case we find the proportion engaged in primary industry declining and in tertiary industry increasing. The proportion of the working population engaged in secondary industry appears in every country to rise to a maximum (my emphasis) and then to begin falling, apparently indicating that each country reaches a stage of maximum industrialization beyond which industry begins to decline relative to tertiary production" (Clark, 1940:7).[6]

Clark (1957) later suggested that there were some deviations from this proposition among Third World countries. He observed that India, Argentina and Mexico did not follow the sequential "development stages" during 1850-1940. In those countries the industrial sector did not expand as it was presumed. However, Clark still maintained that his earlier premises of the stages of economic growth and development were valid (Clark, 1957:493).

Paauw (1961) has emphasized that the building of historical growth models on the basis of "armchair theorizing or almost intuitive

observation" has tended to outstrip empirical verification. Such models and theories must therefore also be "formulated as meaningful propositions" (Paauw, 1961:180). Goldsmith (1959:25) further pointed out that the early "stage theories" were in fact little more than descriptive classifications of different types of economic organization supposed to follow each other in time. Finally, a number of analysts argued that when tested against the real world, their (stage theories) extremely low level of applicability rendered them virtually useless as analytical tools (Gras, 1930; Meier and Baldwin, 1957:143-147; Hoselitz, 1960:193-238). It may be suggested therefore that there has not been extensive empirical testing of the postulations of stage theory in the context of economic and social organization of the Third World countries.

The attempt to develop a relatively sophisticated stage model of economic growth, however, has only been made in recent years, i.e., in the 1960s. Rostow's generalization of "the sweep of modern history" as "a set of stages-of-growth" (Rostow, 1960:1) has attracted a considerable attention. The model's initial stage as postulated is the traditional society, characterized by limited technology, and a static and hierarchical social structure. As primarily "exogenous" influences stimulate the beginnings of a rise in the rate of productive investment, the installation of "social overhead capital" (roads, railways, etc.) and the evolution of a new social and political elite, the pre-conditions for a "take-off stage" develops. Agriculture and extractive industry play a key role of stimulation in this stage of economic growth. The crucial stage, however, is "take-off", when economy and society "are transformed in such a way that a steady rate of growth can be, thereafter, regularly sustained" (Rostow, 1960:8-9). After "take-off"

follows "the drive to maturity" during which the impact of growth is transmitted to all parts of the economy. Finally, with the shift in sectoral dominance to industries such as consumer goods, ensues the age of high mass consumption.

Numerous criticism has been against Rostow's "stage-theory". For example, nearly all reviewers (Enke, 1964:201; Drummond, 1961:113; Cairncross, 1961:451) agree that Rostow's model "simply fails to specify any mechanism which links the different stages" (Baran and Hobsbawm, 1961:236). Specifically, most economic historians (Ohlin, 1961:649-650; Hagen, 1962:519-520; North, 1958:75) deny that histories of developed countries reveal any indication of a "take-off" period in which investment rates suddenly rose sharply. More importantly, the concepts of economic growth through the "universal" stages are typically ahistorical and static in terms of their analytical nature. This is because these "equilibrium" approaches do not take into consideration the dynamism of variables related to the development of social and economic organizations.

Diametrically opposite to this "equilibrium" approaches to development at the national level, the historical-structuralist approaches do not admit a single dimension of development in which all societies follow a stereotype path of socio-economic transformation and development. The fundamental question does arise concerning why the traditional self-sufficient societies of today's Third World countries had not been followed by an en route development process of capital accumulation. In other words, why does the transformation of so-called stages occur in some societies and not others? Why do they take place at different rates and in different forms? During the 1970s, the explanation and

answer to the above questions came in the emergence of "dependency theory": a bi-polar spatial concept of "development-underdevelopment".

This theoretical perspective views development and underdevelopment at the national level not as two different stages in the process of progress but as integral parts of one world system. The forms of that socio-economic stagnation and poverty in Third World countries are largely a creation of the process of capitalist world expansion primarily in the form of colonialism. It is argued that rapid industrial growth in present-day developed countries could not have occurred without conditioning of a "periphery" from which economic surplus was extracted and necessary raw materials secured (Foster-Carter, 1974:80; Baran, 1957; Portes, 1976:122). Thus, underdevelopment is not an "undeveloped" state prior to capitalism but the aftermath of its evolution. In sum, "dependency" analyses generally identify two major consequences of the activities of multinational enterprises within import-substitution industrialization: (i) externally, international metropolis centers have led to subordination-dependence of underdeveloped peripheral nations. This is because of the fact that production in Third World countries is generally export-oriented, while consumption is import-oriented; (ii) internally, the process of penetration of capitalism into the feudal societies of the previously colonialized countries has led to emergence of new privileged groups, sub-satellite spatial areas and the acceleration of social inequality (Frank, 1966; Amin, 1972; Laclau, 1971; Foster-Carter, 1974).

Ernesto Laclau (1971) summarized major postulations of the structural-historical approaches to development: (1) development does not occur through a succession of stages, and today's developed countries

were never underdeveloped, rather they were once undeveloped; (ii) underdevelopment is a part of the historical product of relations between the underdeveloped satellite and the present developed metropolis; (iii) the dualist interpretation of feudalism and capitalism must be rejected because capitalism has effectively penetrated into the colonialized-traditional societies; and (iv) metropolitan-satellite relations are found within countries as well as in the world order (cited in Chilcote, 1974:135-136).

In the light of the inherent theme of dependency theory, this thesis will attempt to determine the patterns of economic growth by focussing on the dominance of labour force sectors in an underdeveloped country like Bangladesh. Specific interest will be given to the question whether underdeveloped countries can achieve so-called "equilibrium" (Clark's "maximum" or Rostow's "take-off") through the process of industrialization. The sectoral dominance of the labour force is here considered as an analytical tool to examine the characteristics of the socio-economic organization.

In the context of growth patterns of labour force structure and economic organization in the Third World countries, McGee (1971) developed a "dynamic model". McGee explicitly indicated that due to underdevelopment, increasing demographic dependency of unemployed and underemployed is created by the breakdown of rural structures. He revealed that through the penetration of a cpaital intensive economy into a bazaar—type economy, real demand for labour in an industrial sector is not created. A unique mode of production in Third World countries is developed in place of a capitalist industrial system. As a consequence, a direct shift out of agriculture to the tertiary "non-productive" sector

takes place (McGee, 1971:64, 94). McGee finally pointed out:

> "The empirical evidence for an identical change in occupational structures of many underdeveloped countries is not strong. The pattern now appears to be that urbanization is proceeding at a more rapid pace than the expansion of manufacturing employment, resulting in a direct shift out of agriculture into services" (McGee, 1971:27).

Muñoz *et al.* (1979) also agree with this proposition in their study of tertiarization of the labour force in Mexico City in the 1970s. They observed that during the 1970s, reduction of investment, inflation and the growth of the labour supply through large-scale internal migration together reduced the capacity to continue absorbing workers. Thus, low income activities in the tertiary sector have developed faster than in earlier years, which has caused increased unemployment and underemployment.

The second theoretical consideration of this thesis is related to distributional patterns of economic activities of the Bangladesh population, and regional and socio-economic implications of such patterns. In the process of economic development, examination of the patterns of regional concentration and dispersion of economic activities within the country is of particular interest. Specific attention will be given to empirical evidence regarding differential regional economic growth in order to assess the effectiveness of a variety of current theoretical orientations.

Remarkably, not only a difference in *scale* appears when comparison is made between the approaches of national level development process and sub-national or regional development concepts, but the emphasis in the analysis shifts from *temporal dimension* of social organization to *spatial organization*. Such a view of the interrelationships between

societal development process and development of spatial organization are succinctly expressed by John Friedmann (1972):

> "Society is spatially organized in the sense that human activities and social interactions are space-forming as well as space-contingent. It follows that as a society undergoes development, its spatial structure will be transformed, but the development process will also be influenced by the existing patterns of spatial relations and the dynamic tensions that will result from them .... In order to state a spatial theory of development, therefore, it is necessary to establish a linkage between the separate but correlative theories of social change and spatial organization (cited in Soja and Tobin, 1975:199).

Soja and Tobin (1975) point out that most existing theories of regional or spatial development have been derived either from development economics or from related functionalist concepts in the other social sciences. As a result, spatial systems, like economic or social systems, are usually viewed as being in a "state of dynamic equilibrium". According to this approach, once initial decisions are made to locate a particular economic activity or institution at a specific point, a kind of self-generating momentum is established which eventually continues to attract related enterprises and "multiplies" the impact of a given social, economic or political investment. Ullman (1958) notes that the remarkable tenacity of initial locational decisions is evident in all stages of development, from the bulging primate cities in Africa, Asia and Latin America to the megapolitan urban areas in the Developed World. It is therefore suggested that economic growth is scarcely ever spread evenly over the whole area of a given state or country, but rather concentrated at certain locations, producing a mosaic of regions at different levels of economic prosperity (Hirschman, 1961:183; Paauw, 1961:186; Keeble, 1967:257; Friedmann, 1972).

Among the approaches of spatial equilibrium development, the

theories of "multiplier effects" and "growth pole" are prominent. As stated above, once growth of economic activities starts in a particular locality it tends to take on its own momentum through the "multiplier effect" and hence give that locality a distinctive advantage over other areas. With the development process, various kinds of facilities become agglomerated in a particular locality, especially infrastructural and institutional opportunities. Capital, labour, skill and entrepreneurial ability flow towards such locations to take advantage of these facilities, which Marshall called "external economies", and which are analogous to "social overheads" (Akhtar, 1965:577-598). This process takes place because the individual decision-makers, governments and entrepreneurs choose locations to maximize profits through distance-minimization. As a consequence of such growth, larger incomes and wages are generated through such profit maximization which leads to more consumption, more savings and investment, and results in more employment and subsequent growth. In such a process, different parts of a country show uneven rates of growth and employment opportunity, creating differential advantages in some regions (Williamson, 1965:1-10). This situation gives rise to considerable inter-regional as well as inter-class or individual disparity in levels of welfare. This, in turn, is likely to become a vital social, economic and political issue.

It is, however, suggested that growth in the advantaged regions has both positive and negative repercussions for the disadvantaged or backward regions (Myrdal, 1944:75-78; 1957:30-31; Hirschman, 1961:137). It is argued that under favourable conditions, the growth regions tend to stimulate growth in backward regions by the creation of new markets for raw materials, as well as a demand for labour ("spread effects").

This can also stimulate production and employment that generates better welfare and higher incomes in depressed areas. Thus, the process of growth of specific locations may initiate positive growth in backward regions; and in some cases it may stimulate the rise of new growth regions. Based on these assumptions, a number of theories have been forwarded in the field of spatial growth and development, notably by Parroux (1964), Boudeville (1966), Christaller (1966), and Friedmann (1966; 1972). Typically, proponents of polarized growth believe that mobilization of resources, both human and capital, from backward regions or hinterland areas to growth poles or locations may ultimately benefit the hinterland through "spread effects" or "multiplier effects".

Wiest (1979:179-180) points out that the major limitation of the equilibrium approach is that it does not account for the historical process of resource mobilization and appropriation and usually ignores the underlying structural contradictions. The underlying assumptions of equilibrium-polarization theories are primarily based on the theme of regional growth "deviation-amplification" (Soja and Tobin, 1975:201). The increasing regional variation must be considered carefully while it is also suggested that despite the advantages of polarized growth, there may be considerable adverse effects on backward regions ("backwash effects"). Backwash effects occur when there is a transfer of factors of production from the hinterland regions to the growth regions because of immediate economic returns. Such a process of resource mobilization results in a downward trend in the economic growth pattern in backward regions, which Myrdal (1944:45-78) observes eventually tends to be cumulative. In Myrdal's view, massive government intervention control is necessary for "spread" to outweigh "backwash" in societal transforma-

tion. A "deviation-countering" force needs to be initiated through human intervention. Reduction, if not removal, of disparity is desirable because the objective of development planning is not merely pure economic growth in quantitative terms, but also progress which leads to a "diminuation of social tensions between groups within society" (Boudeville, 1966:169). In this connection, it is worth noting Smith's (1973) remarks:

> "Whenever we find differences in well-being among individuals or groups of people in society, an unjust situation is recognized" (Smith, 1973:12).

Whatever one may plan for, the real issue is the welfare of the people, and what Myrdal called the "equality doctrine" (Myrdal, 1956:107-131; 1963:7).

However, opposing the arguments of the regional-equilibrium approach, a number of political economists argue that the distinguished scale difference between the national and sub-national spatial systems is not acceptable (Baran, 1957; Frank, 1966; 1972; Amin, 1974). They concede that these two systems of spatial organization are not mutually exclusive, rather mutually inclusive: two sub-systems in a hierarchical world system of capitalistic development that follows an identical model of a metropolitan-satellite spatial relationship. Also, their development is viewed in terms of historical evolution of societal organization. For example, according to this point of view, economic growth of developed nations was initially accomplished by either appropriation of resources and raw materials from colonialized territories or by greater local natural resources opportunities. Subsequent improvement in scientific innovation, transport and communication systems, as well as higher levels of education and technology led to positive "spread

effects" within developed countries. In contrast, underdeveloped countries, owing to their role as hinterland to the colonial domination and having been integrated in the historical process of capitalistic development, finally experienced imbalances in their population-resource relationship. Even after decolonialization, planning mechanism did not change much due to the legacy of colonialism in bureaucracy and administrative set-up. This eventually led to a further uneven spatial growth with concomitant urban bias in the planning process. Consequently, national economic growth did not benefit all parts or regions within underdeveloped countries. Only a particular class in privileged locations (such as the capital or port-based urban areas) obtained the maximum benefit of economic growth.

Finally, it follows therefore that any increase in inter-regional disparities of development and growth may lead to domination of growth regions (metropolis) over the backward regions (satellite), particularly in the disposal of national resources. Without social and spatial considerations in policy formulation and planning measures, economic activities tend to agglomerate, growth areas may advance further at the expense of other areas, so that disparities increase. In Third World countries, national resource allocation, both sectoral and regional, is administered by the public institutions. The minimization of inter-regional and inter-sectoral gaps is thus only possible through necessary measures at the national level. In order to attain a cohesive nature of national spatial integration in underdeveloped countries, more attention should be given to balanced regional planning and welfare. It should be mentioned that although it is in the interest of a nation as a whole to optimize the use of natural and human resources, their mobilization

for a polarized growth can only provide short-run benefits in welfare of the overall society. This is because increased underdevelopment, unemployment in local employment market, and dependent population structure in the backward regions create greater social opportunity cost. This, in turn, may adversely affect national aggregate production as well as welfare in the long run.[7]

The Bangladesh Setting

Bangladesh emerged as an independent political unit in 1971. The country lies between 20° 31' and 26° 45' North and 88° and 92° 56' East. The total area is 55,598 square miles. The greater part is covered by the deltaic formations of the Ganges and Brahamaputra River; and floodplains of Meghna, Gorai-Madhumati, Tista, Arial Khan, Karnaphuli, and an immense system of tributaries and distributaries. Tectonically, the country constitutes the major part of the Bengal Basin, while the remaining portion of the basin lies within the Indian territory of West Bengal. The Bengal Basin is bordered on the north by the Shillong Plateau, on the west by the Peninsular Shield of India and on the East by the Naga-Lushai folded belt. The southern fringe is open towards the Bay of Bengal. On the basis of geologic formation, relief features and river systems, Ahmed (1968:39-46) identified five major physiographic divisions of Bangladesh, namely: (i) Tertiary Hills of Chittagong and Chittagong Hill Tracts and south Sylhet; (ii) Pliestocene Terraces of north Bengal in parts of Dinajpur, Rangpur, Bogra and Rajshahi; Madhupur Tract of Mymensingh, Tangail and Dacca; Lalmai Hills of Comilla; (iii) the Flood Plains, mainly north and east of the Ganges

River; (iv) the Deltaic Plain covers the south of Ganges River to the Bay of Bengal; and (v) the Coastal Plain which extends from Noakhali to south of Chittagong (Figure 1.1). With the exception of tertiary hills and pliestocene terraces, the country is less than 50' feet above sea level. In normal years one third of cultivable land area is three feet or more under water during the monsoon floods. The silt deposited during this seasonal inundation maintains high soil fertility, especially in the southern flood plain and the deltaic plain areas, making possible the extreme rural population densities. The geographic distribution of population and settlement reflects the correlation of physical characteristics and economic advantages. The process of rural population distribution can be traced back to the introduction and expansion of the jute industry by British companies during the late nineteenth century.

The major population concentration was located in the central, actually flushed part of delta and later in the eastern and north-eastern flood plain areas. In 1787, the tributaries of the Ganges and Tista River changed their courses after serious floods in north Bengal. This resulted in decaying conditions in the southern distributaries, called the "moribund delta area". The south-western region of the country become vulnerable to epidemic diseases, which lasted for the next two hundred years. Since the historic period, the western districts of the country characteristically had low population settlement density. Arthur and McNicoll (1978:32) observed that since the 1960s, with the increased use of irrigation and chemical fertilizers, high yielding rice varieties have replaced traditional varieties especially in Dinajpur, Rajshahi, Kushtia and Jessore districts. This

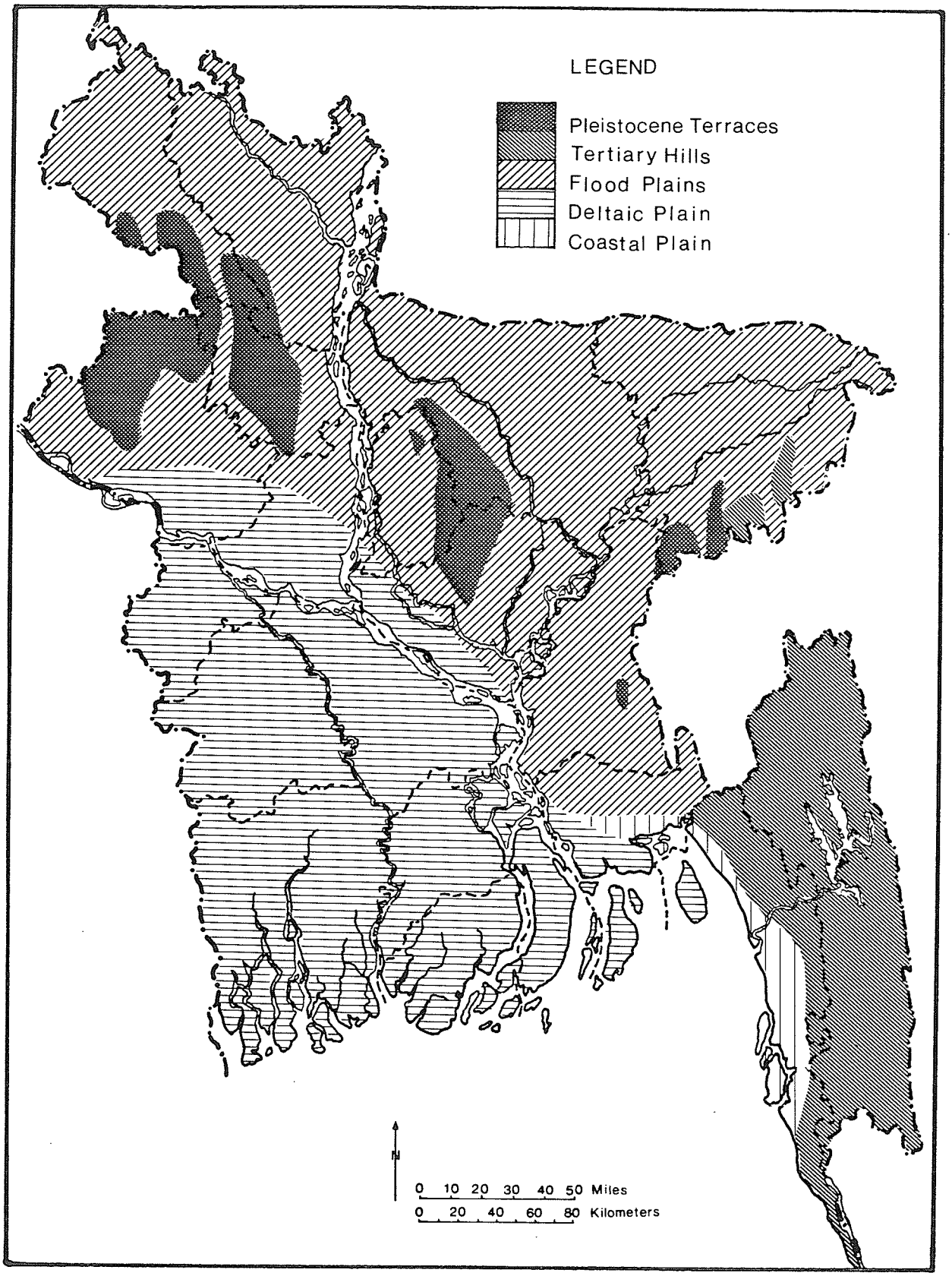

FIGURE 1.1 Physiographic Divisions of Bangladesh

Source: Ahmed, N. (1968), An Economic Geography of East Pakistan (London: Oxford University Press):30.

modernization in agriculture resulted in a relatively higher population growth rate, and as well has attracted large in-migration during the 1961-1974 inter-censul period. This migration came mainly from the eastern and south-eastern districts where a high man-land ratio had already prevailed. Table 1.1 gives a recent picture of man-land ratios in the districts of Bangladesh, computed as the proportion of rural population to the total cultivable land. The high man-land ratio in the active delta region and in the areas of dynamic river morphology are partly caused by the fact that people tend to settle faster in newly emerged char (shoals and bars) lands. Together with local population, large scale in-migration resulted into an increased density of settlement and population in these south-eastern regions.

The distribution of urban population, which is usually considered as a variable related to modernization in the conventional sense, is deep rooted in the colonial past and the socio-political history of the territory. Growth of the urban areas, as mentioned earlier, can be traced back to their role as administrative centers serving the external purposes of exporting raw materials from the remote hinterland areas to the larger metropolitan cities of the colonial rulers. Bertocci (1976) remarked that the control of state power of the territory of Bengal and the administrative decision-making centers had been outside the region for centuries. In the late eighteenth century, Moghal power gradually diminished with the ascendency of the British East India Company. Formal British administration followed in 1857. Company dominance rapidly initiated a process of disintegration of the local industries, particularly the small cottage, hand loom and local artisan industries. It converted the region into a raw material base for

TABLE 1.1 Distribution of Man-Land Ratios in the Districts of Bangladesh, 1974

Districts	Rural Population (in '000)	Cultivable Land (in '000 acres)	Man-Land Ratios
Chittagong	3410	853	4.00
Chittagong Hill-Tracts	459	153	2.55
Comilla	5572	1388	4.01
Noakhali	3165	954	3.32
Sylhet	4628	1901	2.43
Dacca	5361	1373	3.90
Faridpur	3943	1277	3.09
Mymensingh	7143	2515	2.84
Tangail	1969	621	3.17
Barisal	3774	1182	3.19
Jessore	3146	1267	2.48
Khulna	3037	1099	2.76
Kushtia	1727	738	2.34
Patuakhali	1461	703	2.08
Bogra	2148	745	2.88
Dinajpur	2457	1290	1.90
Pabna	2600	968	2.69
Rajshahi	4021	1757	2.29
Rangpur	5185	1760	2.95
Bangladesh	65204	22571	2.89

Sources: Government of Bangladesh (1977), Bangladesh Population Census Report 1974: National Volume (Dacca: Bureau of Statistics): 347-70.

Government of Bangladesh (1979), Statistical Yearbook 1979 (Dacca: Bureau of Statistics): 159.

British industry, specializing in export crops, such as indigo and sunflower in the early eighteenth century, and later jute and tea. Newer administrative centers were established in order to collect and export these raw materials, and subsequently to facilitate diffusion of finished secondary imported goods to the hinterland markets. Rahman (1974:90) noted that many new administrative centers owed their origin to the Zamindars (landlords) who were de jure agents of central administration for local law and order in Bengal. Hasnath (1974:83) pointed out that the seat of administrative of each of the administrative regions developed into urban centers where professionals, traders, administrators and clerks settled and formal educational institutions grew up to feed the emerging tertiary jobs. As a result, there emerged a new "middle class" with the appropriate values and attitudes for gradual separation from the primary production system. However, the process helped to prolong the rule of the colonial power over the territory.

The creation of Pakistan in 1947 put an end to official colonial rule. But for the masses of Bangladesh (then East Pakistan), the new settings merely transferred political power from London and Delhi to Karachi, creating a new semi-colonial relationship that resulted in economic deprivation for Bangladesh. Jute milling, paper and newspaper milling and other raw material industries were established in and around Dacca, Chittagong, Khulna and Narayanganj to make profits for the new capitalists based in West Pakistan, particularly in the Punjab. Large scale capital resources, in the form of profits that emerged from the raw materials and cheap labour of Bangladesh were transferred to West Pakistan during the Pakistan regime (1947-1971). The government of

Pakistan admitted to a transfer and deprivation of about U.S.$ 3,750 million during 1947-1969 (Government of Pakistan, 1970). This period of exploitation generated to political opposition and the demand for regional sovereignty. Ultimately, these regional disparities resulted in the devastating civil war of 1971. Following the nine month war, which displaced 7 to 10 million people as temporary refugees to neighbouring India and caused the death of half a million people (Faaland and Parkinson, 1976:12), Bangladesh gained independence on December 16, 1971. Thereafter, there has been a significant change in the process of population redistribution and socio-political conditions.

Literature on the Labour Force in Bangladesh

The purpose of this section is to survey the existing literature on the labour force in Bangladesh and to critically examine the objectives, methods of analysis and findings of these studies. It should be mentioned here that the discussion and review of related literature on the subject of labour force *per se*, and related topics such as economic development, are placed in the relevant chapters. The discussion on the techniques or methods of analysis used are also placed in the introduction of the appropriate chapter or section.

To date, the literature on the labour force in Bangladesh can be classified into two types of studies: (i) micro-level village studies; and (ii) national aggregate structural studies. The village based studies are primarily surveys focussing on rural employment and unemployment patterns. The national level analyses were heavily dependent on secondary sources of data from censuses and other

governmental statistics.

A large volume of literature on Bangladesh focuses on the extent of rural unemployment and its variation with seasonal demand and supply of the labour (Dacca University Socio-Economic Survey, 1958; Islam, 1964; Habibullah, 1962; Farouk and Ali, 1977; Cain, 1977). Scale coverage of these studies is micro-regional and surveys were conducted mainly at the individual village level. It is difficult to draw any generalization from findings of these studies, because of the differential approaches and methods used.[8] Still, some of the findings are useful for the understanding of the regional variations in labour force participation in the country.

In 1956, one of the earliest studies on the extent of unemployment was carried out in four sub-divisions of four different regions of Bangladesh: Narayaganj, Rangpur (Sadar), Rajbari and Feni (Dacca University Socio-Economic Survey, 1958:103). Using the "time approach", this study clearly indicated the differences in rural unemployment patterns among the four regions. The percentages of unemployed adult male were found to be: Narayanganj 41.3, Rangpur 11.5, Rajbari 26.1, and Feni 45.2. The farm families (N = 3,144) showed a much smaller proportion of unemployed males in the whole year. The percentages of unemployed among the farm families was recorded as 0.27 at Narayanganj, 0.09 at Rangpur, 0.60 at Rajbari and 45.2 at Feni sub-division. In contrast, Habibullah (1962) found a much higher unemployment rate (25 percent) in an intensive study in the Noakhali district, where the whole year of agricultural work was covered. Farouk and Ali (1977) surveyed six unions from six different regions in Bangladesh to determine the pattern of time use in productive[9] work by the population aged 18 years

and above. Their study revealed that the proportion of unemployment varied from only 1 to 6 percent among the seven unions. In all, the micro-regional studies should be considered as "normative", and do not provide any regional and national parameters of labour force size.

A few studies have attempted to deal with national-aggregate models of labour force structure in Bangladesh. The "first manpower survey" was conducted for estimating the national size and structure of unemployment and underemployment in 1955, under the extended Program of Technical Assistance (International Labour Office, 1962:170-174). These national estimates for unemployment and underemployment rates 3.5 and 17.0 percent respectively. Underemployment was measured using the criterion of working less than half the average working week.

Farooq (1968) analysed census data of labour force participation for the period of 1901-1961 to examine the patterns of growth of the nation as a whole. He showed that the abrupt increase in the labour force participation rate in the country during 1951-1961 was due to application of differential definitions in the censuses. Farooq also examined the determinants of labour force structure in Bangladesh and concluded that demographic factors, such as population growth and urbanization, were more responsible for variations than were economic factors, i.e., years of schooling or legislative measures for restricting child labour, etc.

Huq (1978) analysed the labour force structure for the nation as a whole using 1974 census data on economic characteristics of population. But he dealt only with the dimension of length of life expectancy of the working population in Bangladesh. He estimated that 71.6 percent of entries into the male labour force occurred by 15 years of age, and

that 53.5 percent of retirements took place at age 75 and above.

In sum, the contributions reviewed above to the fields of economics and statistics in Bangladesh are concerned mainly with: (i) the methods of estimating the rate of unemployment and underemployment in the agrarian economy; (ii) a non-spatial "synchronic" description of the national size and structure of the labour force. Geographic analysis in this area of investigation is a recent phenomenon in the country. An attempt was made for the first time by Ali (1980). He focussed on the temporal and spatial variations in the patterns of part-time farming in Bangladesh over the period 1950-1980. Although the method used to estimate the regional parameters for the districts was not statistically significant, it nevertheless provided a tentative dimension of regional variations in the agricultural labour force.

Finally, it should be mentioned that no substantial attempt has yet been made to investigate the spatial and temporal aspects and characteristics of the labour force structure *per se* in Bangladesh. In view of the problems formulated in the preceding discussion, the structure of the manpower and labour force deserves special and intensive investigation from a geo-demographic point of view.

The Study Area, Sources of Data, and Methodology

This study covers the national territory of Bangladesh. The districts are considered appropriate spatial units for regional analysis. The administrative structure and hierarchy of the country with its corresponding quantity of smaller spatial units in each category is shown in Figure 1.2. The selection of units smaller than the district

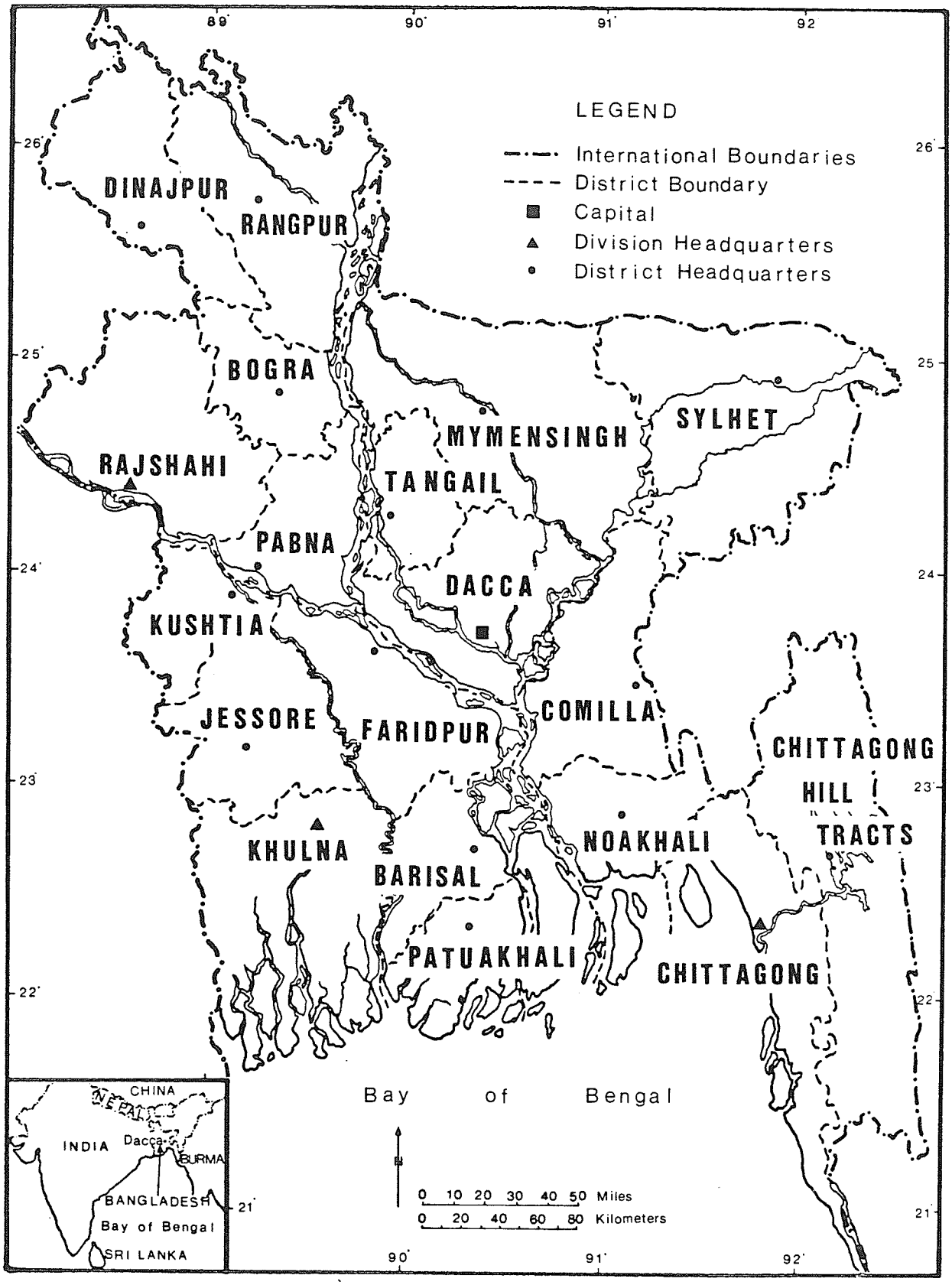

FIGURE 1.2 Base Map: Administrative Districts of Bangladesh

would have been desirable, but lack of data at that scale precluded the possibility. Considering this limitation, the district has been taken as the region for analysis of labour force distribution. Today, a district in Bangladesh has at least an urban area with considerable administrative and infrastructural network and facilities, and where district headquarters act as the center of all infrastructural networks. Bangladesh is divided now into 19 districts, having the capital in the central region in Dacca (Figure 1.3).

The only source of reliable and comprehensive data on economic activity of the population is the government census. Data from other sources are limited and can only be used for supplementary purposes. For this thesis, relevant statistics were collected from three principal sources: (i) the official statistical sources; (ii) research papers and reports; and (iii) international published statistical materials (see Appendix I).

In order to focus on the methodologies in the study, it is worthwhile to examine the current approaches and methods of objective analysis in the field of Population Geography. Trewartha, a pioneer in this field, argued the case for such systematic or topical studies in geography. He stated that:

> "the study of population is logically the single most important topical approach to geography and one in which the regional concept has its broadest application" (Trewartha, 1953:73).

Zelinsky (1966) identified three types of analysis in this field: (i) a description of population numbers and characteristics (the where?); (ii) the explanation of spatial configurations of these numbers and characteristics (the why where?); and (iii) the geographic analysis of

Country	Divisions	Districts	Sub-Divisions	Thanas	Unions	Villages
Bangladesh	Chittagong	Chittagong	3	26	264	1317
		Chittagong Hill Tracts	6	30	47	378
		Comilla	4	25	355	5654
		Noakhali	3	15	173	1941
		Sylhet	4	37	318	3195
	Dacca	Dacca	6	48	370	6568
		Faridpur	5	26	308	3665
		Mymensingh	6	45	447	6771
		Tangail	1	10	99	2251
	Khulna	Barisal	5	27	224	2461
		Jessore	4	21	232	3760
		Khulna	3	23	216	3883
		Kushtia	3	12	107	1649
		Patuakhali	2	11	99	1036
	Rajshahi	Bogra	2	14	139	1912
		Dinajpur	2	22	194	3152
		Pabna	2	17	150	2887
		Rajshahi	4	30	272	6192
		Rangpur	4	34	339	3713
TOTAL	5	19	69	473	4354	62385

FIGURE 1.3 Administrative Hierarchy and Divisions in Bangladesh

Source: Government of Bangladesh (1979), Statistical Pocketbook of Bangladesh 1979 (Dacca: Bureau of Statistics):116.

population phenomena relating areal differences in population within the geographic study area. It can be argued that Zelinsky's approach emphasized more the character of places and areal differences which in turn minimized the importance of spatial dynamics (the how?).

Clarke (1965) remarked that population geography is concerned:

> "with demonstrating how spatial variations in the distribution, composition, migrations, and growth of populations are related to spatial variations in the nature of places" (Clarke, 1965:2).

Clarke further pointed out that while the demographic approach is devoted to numbers and depends upon statistical methods, the geographic approach to population phenomena relates numbers to area and beliefs upon maps.

Ackerman (1959) emphasized a three level approach to the problems of this field: (i) the identification of generic relations in population studies which include categorization, classification, and differentiation procedures; (ii) an inquiry involving the establishment of genetic relationships of dynamic process of spatial distribution with temporal variables; and (iii) determination of covariant relations in terms of areal association and interaction between and among phenomena. This approach may be thought to be more realistic and appropriate to the problem of population studies in geography as well as relevant to the core objectives of the discipline. Nevertheless, besides the concept of areal differentiation, the field deals with those processes which create areal distributions, the spatial interaction and the systems of the geographic character of population.

Limitations of the Study

The evolution of the concept of "labour force" from the total population is closely associated with the process from which the modern industrialized market economy has arisen. In an underdeveloped economy and traditional society like Bangladesh, productive technology is still at a low level, and mass agricultural production is the basis for family subsistance. Self-employment is a common feature in such societies. It is, therefore, difficult to distinguish individuals in terms of direct wage-earning participation in economic activities. With the aim of international comparison, however, a common definition is used in the national censuses of developed as well as underdeveloped countries (International Labour Office, 1980:2-4).

The identification of the size of the economically active population is more complex in an agrarian economy, which is characterized by seasonal variation in the demand and supply of labour force. Thus, the fact that the 1961 census enumeration was taken in the winter season might have caused some degree of under-enumeration of the agricultural labour force. This point is also relevant to the 1974 Population Census of Bangladesh.

Changes in concepts and definitions limit intercensal comparability, particularly in terms of age-cohort of the labour force. In the censuses of 1961 and 1974, information on economic activities were obtained for the persons 10 years of age and over. The census of 1951 concealed child labour by excluding persons below 12 years from enumeration on working status. Hence, adjusted figures are shown when comparisons are made with the 1951 census.

Prior to the partition of India and Pakistan, the measurement of economic activity was based on a count of "gainful workers", whereas in the subsequent censuses the "labour force" concept was used for measuring non-agricultural economic activity.[10] Regarding the reference period for ascertaining the employment status in non-agricultural activity, a "month preceding" the census date was used in 1951, and a "week preceding" the census date was employed in both the 1961 and 1974 censuses. Moreover, Bean (1968) and Islam (1974) have pointed out that due to the strict purdah[11] system and the consequent complexities of the household economies in the traditional society, female economic activity has been concealed or under-reported commonly in all the censuses.

Finally, without reorganizing the definition and classifications of labour force, the available data suffer from certain limitations. A high degree of illiteracy combined with a lack of sufficiently trained enumerators in Bangladesh adversely affects the reliability of statistics. It should be mentioned that the eleventh decennial census for the territory which is now Bangladesh, was due in early 1971. It was delayed by three years by the "liberation war" which led to the emancipation of Bangladesh as an independence country. As the inter-censal period covers a time span of 13 years, some of the comparative figures in the text might therefore seem to be inflated. But, since the proportional values are considered, this does not affect the analysis and explanation.

Organization of the Study

The balance of this study is organized into six chapters.

The second chapter discusses the definitions and concepts of labour force used in various censuses in Bangladesh. It also analyses the trend of participation rates in the labour since 1901 in relation to population growth patterns. Emphasis is given to the socio-demographic causes and consequences in determining the trends and patterns of labour force participation in the country.

The third chapter analyses the distributional patterns of labour force participation rates among the districts of Bangladesh. In short, this chapter examines the dimensions of the labour force, such as age, sex, dependency of population and their regional implications.

The fourth chapter examines the structural composition and their regional patterns in the country. In the Bangladesh context, it is emphasized, the experiences of the Western World may not be effectively applied in underdeveloped countries due to different historical and structural characteristics of the socio-economic variables.

The fifth chapter analyses the regional variations and implications of the components of economic activity. Special attention is given to the spatial dynamics of labour force change.

In the sixth chapter, projections of the labour force for different economic sectors are made in order to examine the future prospects of labour force growth in the country. Some policy implications are also incorporated in the light of regional development problems and prospects.

Finally, the seventh chapter contains the summary and conclusions of the study.

CHAPTER 2

LABOUR FORCE PARTICIPATION TRENDS IN THE POPULATION OF BANGLADESH, 1901-1974

This chapter illustrates the trend of labour force size and its pattern of growth in Bangladesh covering the period 1901-1974. Firstly, it introduces the approaches and concepts of labour force in general, and describes the census definition of the labour force in Bangladesh in particular. Secondly, it examines the labour force and population growth, on a longitudinal basis, to determine the patterns of economic growth in relation to the demographic growth in the country. Economic growth creates demand for labour for production processes, and the population structure plays the role of supplying the required manpower. Thirdly, the analyses of the factors of the dynamics of labour force change are also included in this chapter.

Long term demographic data for Bangladesh are limited. Until 1971, data were available only for Pakistan and India as a whole, or for some districts which were divided between these two countries at the time of the "partition of India" in 1947. Adjusted data are therefore used in the present study for the area now comprising Bangladesh.

Concepts and Census Definition of the Labour Force

An appraisal of the manpower resources of a country can be provided by measuring that segment of the population which contributes to the supply of labour on which the economy of the country depends. Although all persons consume goods and services, only a part of the entire population of a country is engaged in producing such goods and

services. Obviously, the young and the old, as well as the physically or mentally incapacitated, do not engage in production activity because of an inability to do so. Conceptually, then, the "manpower" of a nation is the aggregate of persons who could produce and supply services if they desired to participate in such activity. The "labour force" is, in general, that part of the manpower which actually engages, or attempts to engage, in the production of economic goods and services[1] (Figure 2.1). Notably, the difference between "manpower" and "labour force" is particularly useful to understand the condition of demographic structure in relation to the economic condition of any region or country. However, the labour force does not include only those employed at the time of investigation, but also those unemployed but available for and seeking work. The remaining segment of the population is regarded as "inactive and dependent". As mentioned earlier, many difficulties may arise from attempting to distinguish the "economically active population" from the inactive population[2]. The use of a universal standard is not necessarily an appropriate and effective measure as it may fail to take into account the constraints that are peculiar and unique to an under-developed country like Bangladesh. The criterion for distinguishing unemployed persons in the labour force from the persons not in the labour force on the basis of the question whether one was looking for pay or profit is questionable. Such an approach may not be suitable under conditions of complex agrarian social relations and in the place where a wider scope for self-employment exists. Factors like considerable family help from the dependents irrespective of age, as well as close ties among kin and affines, are common in traditional societies. These aspects are ignored in universal approaches to the labour force because

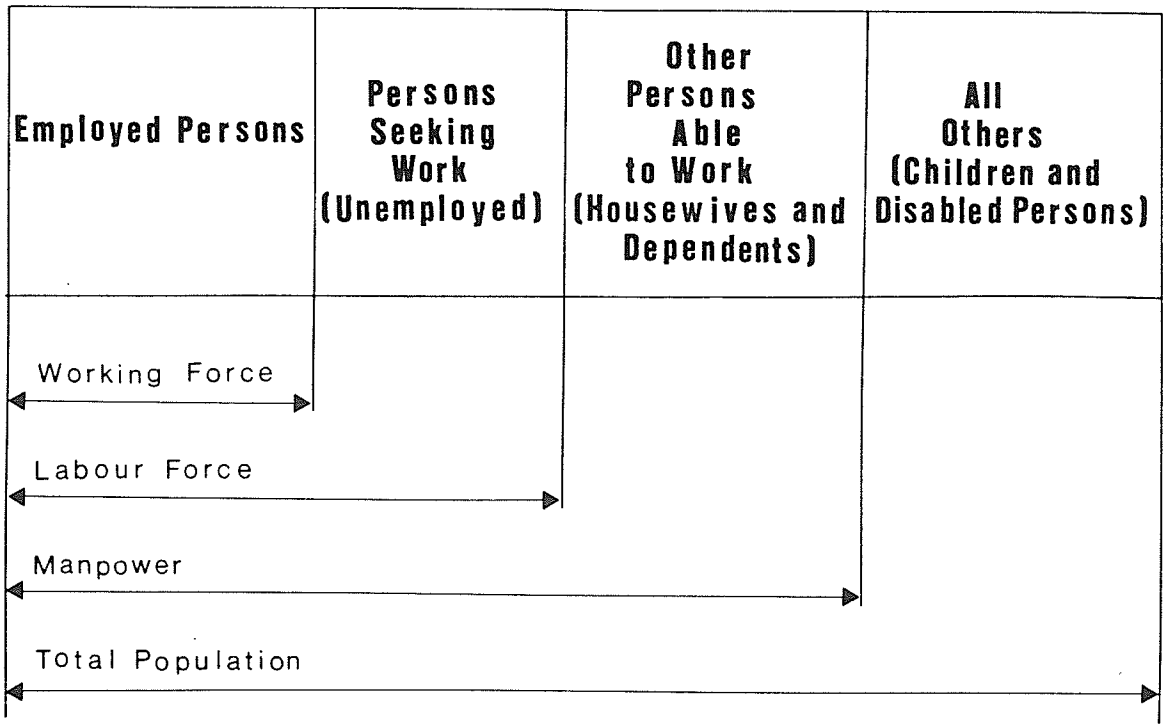

FIGURE 2.1 Classification of Economic Composition of Population

Source: Thomlinson, R. (1965), Population Dynamics (New York): 474.

in a capitalist wage-system it is essential to disguise the "real" cost of production.

It is interesting to point out variations in approaches adopted in the measurement of the labour force. Methods used in recent censuses and surveys in most Asian countries to identify economic characteristics of the population are related to two broad approaches: (i) the gainful worker approach (GWA); and (ii) the labour force approach (LFA). The GWA is based on the concept that each individual has a more or less stable functional role as a breadwinner following a gainful occupation, and that this role is independent of his activity at any given time (United Nations, 1951). The major purpose of this approach is the enumeration of occupations; the analysis of the labour force and employment characteristics are only of secondary importance. The censuses of Bangladesh territory prior to 1961 adopted the GWA, emphasizing the "means of livelihood" of the population (Elahi, 1971: 245). However, in the absence of any reference period that seeks information about how long a person has been working or is looking for work, seasonal variations are not reflected in the data. Even when a reference period as long as one year is used, it possesses the same characteristics.

The LFA attempts to measure the economic activity of each person using a specific reference period, usually a week or a month (Khuda, 1979:89). The 1974 population census of Bangladesh, and the 1961 census of Pakistan, manifested both of these approaches—the GWA was applied to the agricultural population and the LFA to the non-agricultural population (Government of Pakistan, 1961; Government of Bangladesh, 1977). A reference period of one week was used for the population engages in

non-agricultural activities, but this restriction was not maintained for the agricultural population. This may have resulted in an inflation of the agricultural labour force. Also, this is reflected in the extremely low unemployment figures in these censuses. However, the concepts and definitions used to generate basic data on economic characteristics of the population conform fairly well to internationally recommended standards (United Nations, 1968:3). According to the definition used in the 1961 and 1974 censuses, a person was included in the labour force if he or she was reported as a cultivator, as being engaged in other agricultural work or any other work as self-employed, for profit, to earn a wage or salary, or to help economically without renumeration. Any member of the family in farm or non-farm work that earned a wage or profit, or was an unemployed person who had looked for work to earn pay or profit, was also considered in the labour force.

Size of the Labour Force in Bangladesh and its Comparison with Some Selected Countries

A simple method of measuring the extent of participation of a population in economic activities is the "participation rate" or "crude activity rate", which is defined as the percentage of total population of all ages represented by the labour force.[3] A break-down in the general participation rate is made by the "age-specific activity rate", which is defined as the proportion of labour force in a specific age cohort to the total population of that given age cohort. This measure reflects the magnitude of the dependency load borne by the economically active population.

The size of the total labour force in Bangladesh was reported in

the population census in 1974 as 20.52 million, and the participation rate was recorded as 28.7 percent of the total population. Of this, 19.65 million were males and 0.87 million females, constituting 53.0 percent and 2.5 percent male and female participation rates respectively. International comparison of participation rates is different because of varying attitudes towards employment by age group and sex, and to different ascribed characteristics of the population, such as educational attributes, marital status, religions and ritual values, etc. Since the data were collected on economic activity in the national censuses in the countries of different parts of the world on the basis of an internationally recommended common definition, it is reasonable to draw a comparison of participation rates as a whole to review the labour force condition in Bangladesh and other countries (United Nations, 1967).

Table 2.1 suggests that Bangladesh has one of the lowest participation rates of population in economic activities. Also it is strongly male dominated. However, other countries in Table 2.1 are selected because of their respective historical, social and economic structures are useful for comparison with the Bangladesh situation. Some of the developed countries are also included. As shown in Table 2.1 higher participation rates during the 1970s were recorded in all but one of the selected countries compared to Bangladesh. The only exception was Mexico. In contrast, the male participation rate in Bangladesh was higher than in all other underdeveloped countries with the exception of Indonesia. The famale participation rate was lowest among all of the countries considered in Table 2.1.

One of the major causes for such patterns is the social customs and conventions which inhibit the reporting of female participation in

TABLE 2.1 Participation Rates of the Labour Force in Bangladesh and in Some Selected Countries During the 1970s.

Country	Year	Source and Coverage*	Participation Rate		
			Both Sexes	Male	Female
Bangladesh	1974	C	28.7	53.0	2.5
Canada	1978	LFSS	46.7	57.6	35.9
Egypt	1976	C	30.2	54.1	5.5
India	1971	C	32.0	52.5	11.9
Indonesia	1976	LFSS	43.2	53.6	33.0
Japan	1979	LFSS	48.2	60.1	36.0
Mexico	1979	OE	28.3	42.4	14.0
Pakistan	1980	LFSS	29.5	52.1	4.3
Philippines	1975	C	31.9	46.4	17.1
Thailand	1978	LFSS	48.8	51.1	45.7
U.S.A.	1979	LFSS	47.7	57.4	38.5
U.S.S.R.	1979	C	51.4	n.a.**	n.a.

Sources: International Labour Office (1980), The Yearbook of Labour Statistics (Geneva: International Labour Organization): Chapter 1, Table 1.

United Nations (1975), Statistical Yearbook (New York): Table 38.

* c = census; LFSS = Labour Force Sample Survey; OE = Official Estimate

** n.a. = not available.

economic activity in underdeveloped Muslim countries. Firstly, the strict purdah system restricts women from participating in economic activity outside of the household; and secondly, the prevalence of the so-called prestige value of confining "housewives" to household activities, especially in the rural areas of these societies, is consistent with the lower registration of female participation rates. Other variations are caused by the use of differential age in determining the entry of population to the labour force. Most developed countries generally use 15 years of age as the lower limit of the labour

force, while underdeveloped countries consider entry into the labour force to be at 10 or 12 years of age.[4]

Trends in Participation Rates in Bangladesh, 1901-1974

During the period of 1901-1974, there has been an increase in the size of the labour force in Bangladesh from 9.60 to 20.52 million while total population rose from 28.97 to 71.48 million [5] (Table 2.2). The "average annual exponential growth rate"[6] provides the generalized pattern of time-series data accounting for the continuous compounding rate of change, expressed as percentage per year (Shryock, et al. 1973: 377-80; Farooq, 1968:82; also see Appendix XII). In Bangladesh, the "average annual exponential growth rate" of the labour force was 1.03 percent which was lower than the growth rate of 1.24 percent for

TABLE 2.2 Participation Rates and Population Sizes, 1901-1974

Year	Population (in million)	Labour Force (in million)	Participation Rate (%)	Total Dependents per 100 Labour Force
1901	28.97	9.64	33.3	201
1911	31.61	9.98	31.6	217
1921	33.24	10.53	31.7	216
1931	35.57	8.96	25.2	297
1941	n.a.	n.a.	n.a.	n.a.
1951	41.93	12.87	30.7	225
1961	50.84	17.44	34.3	192
1974	71.48	20.52	28.7	248

Sources: Government of India (1901-1933), Census of India, 1901-1931 (Calcutta): Volumes on East Bengal, Assam and Sikkim.

Government of Pakistan (1951-1962), Census of Pakistan, 1951-1961 (Karachi): Volumes on East Bengal/East Pakistan.

Government of Bangladesh (1977), Bangladesh Population Census Report 1974: National Volume (Dacca: Bureau of Statistics).

population during the same period. The higher population growth rate, therefore was responsible for elevating the dependency of 201 persons per 100 labour force in 1901 to 248 in 1974. An examination of the trend of participation rates shows that there has been a continuous decline during that period, resulting in the number of dependents per 100 labour force rising from 201 in 1901 to 297 in 1931. With improved labour force conditions in the subsequent decades, it declined to 192 in 1961. Again, in 1974, when the participation rate fell to only 28.7 percent, dependency rose from 192 in 1961 to 248 in 1974 (Table 2.2).

More specifically, it should be noted that the increase in labour force participation had not been consistent with that of population growth throughout the successive decennial periods. From Table 2.3 three distinct phases of temporal changes in participation rates can be identified:

(i) The first phase from 1901-1951, when the growth of the labour force participation rate lagged behind the rate of population growth;

(ii) the second phase includes the period from 1951 to 1961, when the rates of labour force growth were recorded higher than that of participation growth; and

(iii) the third phase is a period of thirteen years, 1961-1974, similar to the first phase when the growth of labour force again followed behind population growth.

In Bangladesh as a whole, the participation rates have shown a gradual declining trend from 33.3 percent in 1901 to 28.7 percent in 1974, with a remarkable drop in 1931. This drop does not seem to be

plausible and may be attributed to census errors that accrued during the time of "civil disobedience" in India (Farooq, 1968:82). The increase in the participation rate in 1961 was primarily caused by changes in the census definitions, which resulted in the inclusion of a larger proportion of unpaid female workers in the labour force (Bean et al., 1966:587).

TABLE 2.3 Average Annual Exponential Growth Rates of Population and Labour Force, 1901-1974.

Period	Average Annual Exponential Population Growth Rate	Average Annual Exponential Labour Force Growth Rate	Total Years Over Which the Change Took Place
a. 1901-1951	0.74	0.58	50
1901-1961	0.94	0.94	60
1901-1974	1.24	1.03	73
b. 1951-1961	1.92	3.04	10
1961-1974	2.62	1.35	13

Source: same as Table 2.2

However, the overall declining trend in the participation rate can be explained partly in terms of the youthful nature of age-structure and other population characteristics such as high fertility rate and lower age at marriage. It has been observed that unless there were unusual changes in the socio-cultural and economic structure, the age structure remains the basic factor determining the participation rate (Eldridge and Thomas, 1964:1-16). As a result, almost constant high fertility together with a relatively closed population condition in terms of international migration in the country, a younger population structure has gradually become dominant. This, with the passage of time, is

reflected in the reduction of adult age and economically active proportions of the total population.

Dynamics of Temporal Labour Force Change

This section analyses the major causes and factors that have contributed to the process of temporal changes of labour force in Bangladesh since the beginning of the present century. The differential growth rates of the population and the labour force can be divided into the three phases outlined above.

The decline in the first phase in participation rates of the labour force was the result of slow population growth until 1921, due to high mortality. This was later intensified by an out-flow of migration of adult population from Bangladesh to other parts of India (Zacharia, 1964:201). During this period, the country lacked sufficient non-agricultural occupational opportunities and industrialization. It already had a large population size and was economically retarded, while pressure on agriculture was beginning to build-up. Moreover, gradual development of the industrial and commercial complexes in the lower Hoogly Valley (West Bengal, India) were attracting population from what was then East Bengal. Others migrated to Burma and to the mining areas of Bihar and Orissa, and large numbers of peasants moved into the Brahamaputra Valley in Assam, and to the tea gardens of northwest Bengal and Assam (Sadie, 1966:204). Such migratory flows had a negative impact on the activity patterns and rates in the area that is now Bangladesh. Also, the continuous post World War I reductions in mortality resulted in a younger population, thereby reducing the proportion of economically

active population. The noticeable drop in the participation rate for 1931 may be partly explained by legislation of compulsory primary education and expansion of elementary education. However, this does not fully explain the drop in the participation rate. As noted earlier, the census of 1931 took place at the time of "Ashahajog Andolon" (civil disobedience). Obstruction to the census was a publicity in the Indian Congress Party platform (Government of India, 1933:254). Strong religious feeling also prevailed, particularly in Bengal. It was claimed by both Hindus and Muslims that enumerators had inflated the numbers of their co-religionists by making fictitious entries while undercounting persons of the other faith. Consequently, the participation rate was adversely affected in 1931 (Farooq, 1968:82-83).

Because of World War II, the socio-political conditions prevented tabulations of the economic characteristics of population in the 1941 Census. However, the increasing trend which characterized the second phase (1951-1961) can be attributed to two major factors. Firstly, there was the return-migration of population, namely Muslim returning from India, as well as some from Burma (Elahi and Chowdhury, 1976:2). Secondly, there was also a significant increase in the female participation rate due to changes in the census definition of unpaid workers.

Nevertheless, an abrupt and sudden increase in the female participation rate is surprising, since under the mortality and fertility conditions prevailing in the country in what was then East Bengal (see Table 2.4), a proportional decrease of the labour force was rather obvious. Bean _et al_. (1966) remarked that it is theoretically possible for the proportional size of the economically active population to increase only:

> "while the proportionate size of the supply of manpower remains constant, but only if conditions of labour change. Specifically, such a change may occur if a large body of individuals not in the labour force but available as part of the pool of manpower became employed during the given period of analysis" (Bean *et al.*, 1966:587).

There is no evidence that such a change in economic structure, in fact, did occur in Bangladesh during 1951 and 1961. Thus, the overall increase in the participation rate can be attributed to a change in the concept of economic activity of population. Indeed, unpaid family labour, specifically females, was excluded from the 1951 census but was included in the 1961 census. The generalization of an expanding participation rate during the second phase is therefore doubtful.

TABLE 2.4 Vital Rates of Population, 1901-1978

Year	Crude Birth Rate (per 1,000 population)	Crude Death Rate (per 1,000 population)	Natural Increase (percentage)
1901-1911	53.8	45.6	0.82
1911-1921	52.9	47.3	0.56
1921-1931	50.4	41.7	0.87
1931-1941	52.7	37.8	1.49
1941-1951	49.4	40.7	0.87
1951-1961	51.3	29.7	2.16
1961-1974	47.4	19.4	2.80
1974-1978	41.1	17.2	2.39

Source: Government of Bangladesh (1979), Statistical Pocket Book of Bangladesh, 1979 (Dacca: Ministry of Planning): 156.

The declining trend of the third phase (1961-1974) in the participation rates has been primarily due to the fall in crude death rates from about 30 to 19 per 1,000, while crude birth rates remained almost constant at more than 45 (Table 2.4). This resulted in a younger population, with the "median age"[7] falling from about 18 to 16 years,

and the adult proportion falling below 50 percent of the total population. The "total dependency ratio"[8] increased from 1.01 in 1961 to 1.04 in 1974, indicating an imbalanced economic structure in the population (Table 2.5). In this context, it should be pointed out that Kamarschen (1965:179) considered a country "over-populated" when the total dependency ratio exceeded 1.00. This can be used as a general operational index of demographic effects. Thus, the recent increase in the dependency ratio of Bangladesh may have considerable implications for the economic structure in general.

TABLE 2.5 Trend of the Broad Age Groups of the Population, 1901-1974.

Year	Children (%)	Adult (%)	Aged (%)	Dependency Ratio	Median Age
1901	42.11	53.46	4.43	0.87	18.49
1911	43.33	52.60	4.07	0.90	18.04
1921	42.25	53.70	4.05	0.86	18.56
1931	40.93	55.53	3.54	0.80	18.93
1941	41.23	54.82	2.95	0.82	19.07
1951	41.50	53.50	5.00	0.87	18.44
1961	45.10	49.70	5.20	1.01	17.53
1974	46.28	49.06	4.66	1.04	15.73

Sources: Calculated from:

All census reports on Assam, former Bengal, East Bengal and East Pakistan from 1901 to 1961, published by the Government of India (Calcutta)and the Government of Pakistan (Karachi).

Government of Bangladesh (1977), Report on the 1974 Bangladesh Retrospective Survey of Fertility and Mortality (Ministry of Overseas Development, London; and the Census Commission, Dacca).

On the one hand, the demographic components have led to the overall reduction in the proportion of working age population. On the other hand, these have been coupled with various other socio-economic

factors like the diffusion of education at the primary level, increased years of schooling, and high rate of urbanization leading to late entrance into economic activity in the third phase. Moreover, reformulation and redefinition of unpaid family help reduced the inclusion of female housewives in economic activity in the 1974 census. This resulted in a considerable drop in the female participation rate from 10.2 percent in 1961 to only 2.5 percent in 1974 (Government of Bangladesh, 1977:16). Indeed, there is no strong socio-economic reason which could explain a drop of absolute numbers of the female labour force from 2.64 million to 0.87 million during 1961-1974. The total decline of this period took place in the agriculture sector. It is obviously only due to the application of the definition of unpaid family workers who were included as female agricultural workers in the labour force in 1961, but excluded then in 1974. They were categorized as "housewives" in the 1974 census.

Finally, the generalization of the overall declining trend of the participation rates of the population can be seen in terms of the age structure of the population for the study period. In the first half of the present century the proportion of population in the adult age group has shown a fluctuating trend, ranging from 52.60 percent in 1911 to 55.53 percent in 1933. From 1941 onward it started to decline, reaching 49.06 percent of the total population in 1974 (Table 2.5). Consequently, since the beginning of the present century, the adult population which generally possesses the greatest economic potential, had been affected adversely as the proportion of working population to total population declined. Less than half of the population had to bear the burden of the rest who were dependents during the last three

decades.

After 1931, a persistently high fertility and a rapidly declining mortality have resulted in a more broad-based age structure. This resulted in more being dependent on the economically active population over time. Under these circumstances, it may be predicted that the proportion of the adult age group vis-a-vis the working population will continue to decline until the present demographic trends and structures in the country are changed.

Summary

The census of the economic characteristics of population on the Indian sub-continent dates from 1901. However, the use of differential concepts and approaches to the economic activities significantly affected the census enumerations, particularly during 1951-1974 period. Also, the problem of employing a universal definition cannot be ignored. The common definition has been formulated primarily based on the conditions of the market economy, i.e., wage, income, and direct profit. But, the application of a similar approach to the traditional agro-based social conditions may not be appropriate.

The overall trend of labour force participation rates in Bangladesh have deteriorated since the beginning of the present century. While the economic structure remained perhaps the same, demographic components, such as fertility, mortality, and migration have determined the declining trend in the participation rates. Until the first half of the present century (1901-1941), out-migration from the Bangladesh territory to India and Burma reduced the size of the labour force.

Afterwards, the gradual improvement in mortality levels and a constant high fertility level, gave rise to the increasingly younger population structure. Consequently, the proportion of labour force to total population has decreased as well. In sum, the economy, with its traditional production systems, has not been able to cope with an unprecedented growth of population, and this has resulted in lowered participation rates over time, especially since the 1950s.

However, an analysis of the detailed age-sex specific dimensions of the labour force would provide better understanding of the dynamics of labour force structure and its changes. As well, in geographic context, the regional dimension is worthwhile to investigate. These issues are analysed in the following chapter.

CHAPTER 3

DIMENSIONS OF THE LABOUR FORCE

The size of a labour force and its regional distribution patterns within a country are determined by a variety of physical, socio-economic, demographic, and political factors. This chapter examines primarily the extent to which the process of different demographic and regional factors affect participation rates in economic activities in Bangladesh. However, other factors, such as the level of industrialization, the level of education, marital status of the persons in the labour force, social customs and attitudes towards female participation in economic activities, also perform important roles in determining the overall labour force participation in a country or region. These issues are also given attention to this analysis.

From a demographic point of view, the variable activity rates emanating from the age-sex differential have been considered more relevant in the analysis of labour force dimension. From a geographic point of view, the dimension of spatial distribution of participation rates among the districts of the country is also given due attention in the text of this chapter.

Age-Sex Structure of the Labour Force and Population

Table 3.1 shows the population age structure and the relative contributions of each age-sex group to the labour force in Bangladesh. A close relationship between male age cohorts and male participation in the labour force is shown in Table 3.1. This reflects basically the social law assigning to males the role of "breadwinners" in the adult

age cohort of 20-65 years.[1] About one third of the total population are children, aged 0-10 years.[2] In this age cohort, the female proportion is higher than that of males. In contrast, there is only a very small proportion of aged dependents, as less than four percent of population are in the over 65 age cohort. However, most males in this upper age group remain economically active in the country, since no rigid social custom of retirement from work in subsistance agriculture or in the self-employed sector of the economy exists in this area of South-East Asia.

TABLE 3.1 Age-Sex Structure of the Population and the Labour Force, 1974.

Age Cohort	Percentage of the Total Population		Percentage of Labour Force	
	Male	Female	Male	Female
0-4	16.23	17.61	-	-
5-9	17.80	18.94	-	-
10-14	13.45	12.20	5.63	0.77
15-19	8.51	8.03	5.77	0.37
20-24	6.52	7.25	5.48	0.23
25-34	11.48	13.19	11.47	0.37
35-44	10.20	9.57	10.09	0.31
45-54	7.18	6.40	7.07	0.23
55-64	4.57	3.90	4.38	0.17
65 years and over	3.71	2.91	3.12	0.10
Total	100.00	100.00	53.01	2.55

Source: Calculated from: Appendices II and III.

The overall pattern clearly indicates that female participation in each age cohort is negligible, and inversely related to age. Thus, much of potential manpower in the country is outside of economically

productive activities. Moreover, virtually all dependents are in the lower age group, this means that the country will have to substantially expand employment sectors just to continue existing participation rates. In the following discussions, age specific activity rates will be analysed in both national and international contexts.

Male Age-Specific Activity Rates

By calculating age-specific activity rates, the age structure variable is controlled. Being independent of age structure, age-specific activity rates provide a more refined measure of labour activity pattern than do crude participation rates or crude activity rates, and are therefore more appropriate for international and regional comparisons.

The countries characterized by high overall male participation rates, are generally those with a high proportion of their populations in the adult age cohort (15-64 years). Most of the underdeveloped countries have a relatively small proportion of their population in this age cohort, but have a high proportion in the under 15 years age cohort. This unfavourable age distribution is due to an accelerating natural increase, arising from improvements in infant mortality rates, particularly since the 1950s.

A comparison of the male age-specific activity rates in Bangladesh with those of other countries, classified according to the degree of industrialization, is shown in Table 3.2 and Figure 3.1. It appears that the overall male age-specific activity rates increased from age 10 to 25, then leveled off to about 95 percent of the total population of

the corresponding age cohorts up to age 54. Thereafter it declined progressively.

TABLE 3.2 Average (Unweighted)* Age-Sex Specific Activity Rates in Bangladesh and Other Countries Classified by Degree of Industrialization,** 1974-1979 (Percentages).

Age Cohort	Bangladesh		Industrialized Countries		Semi-Industrialized Countries		Agricultural Countries	
	Male	Female	Male	Female	Male	Female	Male	Female
10-14	41.9	6.3	4.1	2.4	13.2	n.a.***	23.9	10.9
15-19	67.8	4.5	72.4	53.6	70.3	n.a.	78.4	30.9
20-24	48.0	3.1	91.5	51.9	91.8	n.a.	91.2	31.5
25-34	96.9	2.8	96.7	30.3	96.2	n.a.	96.3	29.9
35-44	98.6	3.3	97.6	28.3	97.1	n.a.	97.5	30.6
45-54	98.4	3.7	95.6	28.1	95.9	n.a.	96.3	28.9
55-64	95.9	4.0	85.6	20.8	88.9	n.a.	91.6	23.7
65 years and over	84.2	3.3	37.7	7.1	61.0	n.a.	70.1	14.3

Sources: Laskar, S.I. and Khuda, B. (1979), Factors of Labour Force Participation in Bangladesh, Unpublished monograph (Dacca: Bangladesh Institute of Development Studies): 4.

Government of Bangladesh (1977), Bangladesh Population Census Report 1974: National Volume (Dacca: Bureau of Statistics):17-21, 347-370.

* The weight that reflects the relative importance of the observations of population and labour force size in each country have not been considered in computing the averages.

**A country is categorized as "agricultural" if 60 percent or more of its males are engaged in this sector and related activities; "semi-industrialized" if 35-39 percent; and "industrialized" if less than 35 percent of the total male labour force. The number of countries considered was 21 for "agricultural" categories.

*** n.a. = not available.

As shown in Table 3.2, age-specific activity rates in the adult age span of 20-54 years do not vary to a considerable extent in accordance with the degree of industrialization. But, the activity rates in

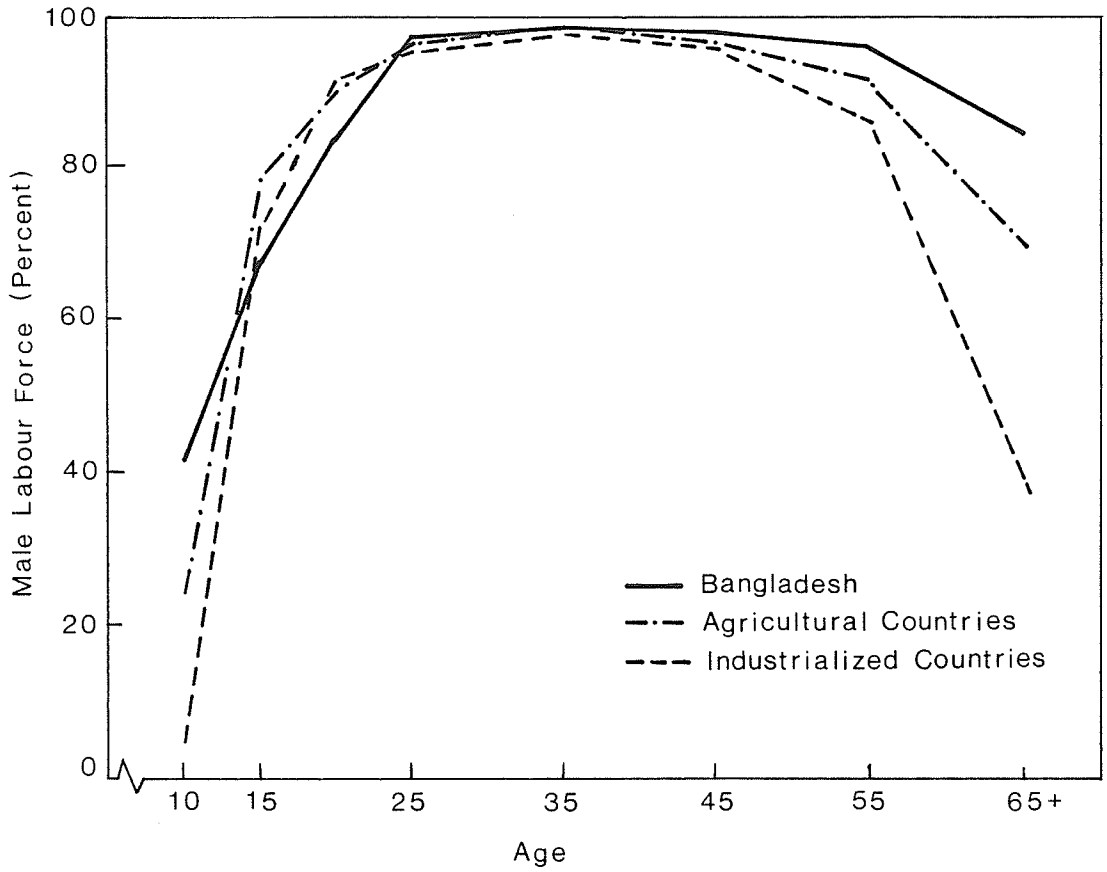

FIGURE 3.1 Average (Unweighted) Age-specific Male Participation Rates for Agricultural and Industrialized Countries, and Bangladesh, 1974-1979

Source: same as Table 3.2.

the adult age cohorts below 19 and above 65 years are much higher in countries with agricultural characteristics than in industrialized ones. Semi-industrialized countries retain an intermediate position. This is because of the fact that it is relatively easy for the young population to be engaged in agricultural work, while in traditional methods it does not require prolonged training or educational qualifications. Moreover, such activities are done frequently at old ages in underdeveloped countries. Agriculture is generally a family enterprise in these countries, and therefore a precondition of a minimum age limit does not exist. This is not the case in industrialized market economies. However, in the absence of the necessary capital in the hands of subsistence farmers, family labour is usually required from male members. Thus, socio-economic conditions compel the children to enter in farm economic activities at an earlier age in the underdeveloped peasant societies. On the other hand, given that the extended family system is the norm in Bangladesh, it might be supposed that early retirement of older persons in the family is possible, since the younger members are able to support them. However, this does not appear to be so, as earning capacities are so low that aged people have to continue in their efforts to supplement the meagre family income well into old age.

The apparent low activity rate in the age cohort 15-24, when compared to other agriculture countries, is due to the omission in the census counts in Bangladesh of "persons seeking work for the first time". Thus, a large proportion of the young unemployed population was excluded from the labour force enumeration in Bangladesh, but were perhaps included in other agricultural countries.

In sum, the activity rates among adult males aged 20-24 is seen

to be unaffected by the level of industrialization and suggests that variation of participation in the labour force is limited to only the young and old males.

Female Age-Specific Activity Rates

The relationship between age and the level of participation rates is more complex in the case of females. Depending on marital status and, more so, on maternal status and the ages of children, a woman's functional role as a home-maker or worker may change at different stages of her life cycle. In other words, the desire and ability of women to participate in economic activities outside the home are influenced by various factors, such as rural-urban residence, production techniques, economic conditions of the family, level of education and skill, customs and beliefs, as well as the responsibility towards childcare and child-bearing.

Table 3.2 and Figure 3.2 show the female age-specific activity rates for Bangladesh and corresponding rates for industrialized and other agricultural countries. As is the case with the male activity rates, the female rates in Bangladesh as well as in the other agricultural countries, are highest in the youngest age cohorts. In contrast to that of males, the averages for female activity rates show greater diversities in their patterns when considered by the level of industrialization. This is because more complex occupational roles are usually performed by the females, and these roles vary according to the characteristics of the society. Also, the application of differential lower age limits for enumeration of the economically active population

affect inter-country or inter-regional comparisons of activity rates, especially in the case of females.

In industrialized societies, a large number of females enter the labour force in their late teens and work until they marry. This results in a sharp fall-off in participation rates in the 20-24 age cohort (Figure 3.2). Many females, however, re-enter the labour force after their children grow up, or if they become widowed, divorced or separated. In comparison, the labour force activity in agricultural countries like Bangladesh shows little variation from the late teens to old age. A large part of economic activity in underdeveloped countries, which is characterized by subsistence agricultural practices, is primarily household-based by nature of work. Thus, changes in women's marital status of her responsibility towards the care of children do not substantially affect her participation in the labour force in these countries as is the case in the industrialized countries.

The religious attitudes on the part of females have usually been given as the reason for low female participation rates, particularly in Muslim countries (Denti, 1968:540). Such attitudes may affect the participation rates in three ways: first, female's participation in work outside the home may be proscribed; secondly, the proscription may result in under-reporting of female workers in the census enumeration to avoid social stigma; and thirdly, religiosity may hinder formal educational efforts by the female and may result in lack of sufficient skill and qualifications to compete in the job market.

Table 3.3 shows the averages of female participation rates by regions of the world. In order to avoid the problem of varying minimum ages, 15 years is considered as a standard minimum age of participation

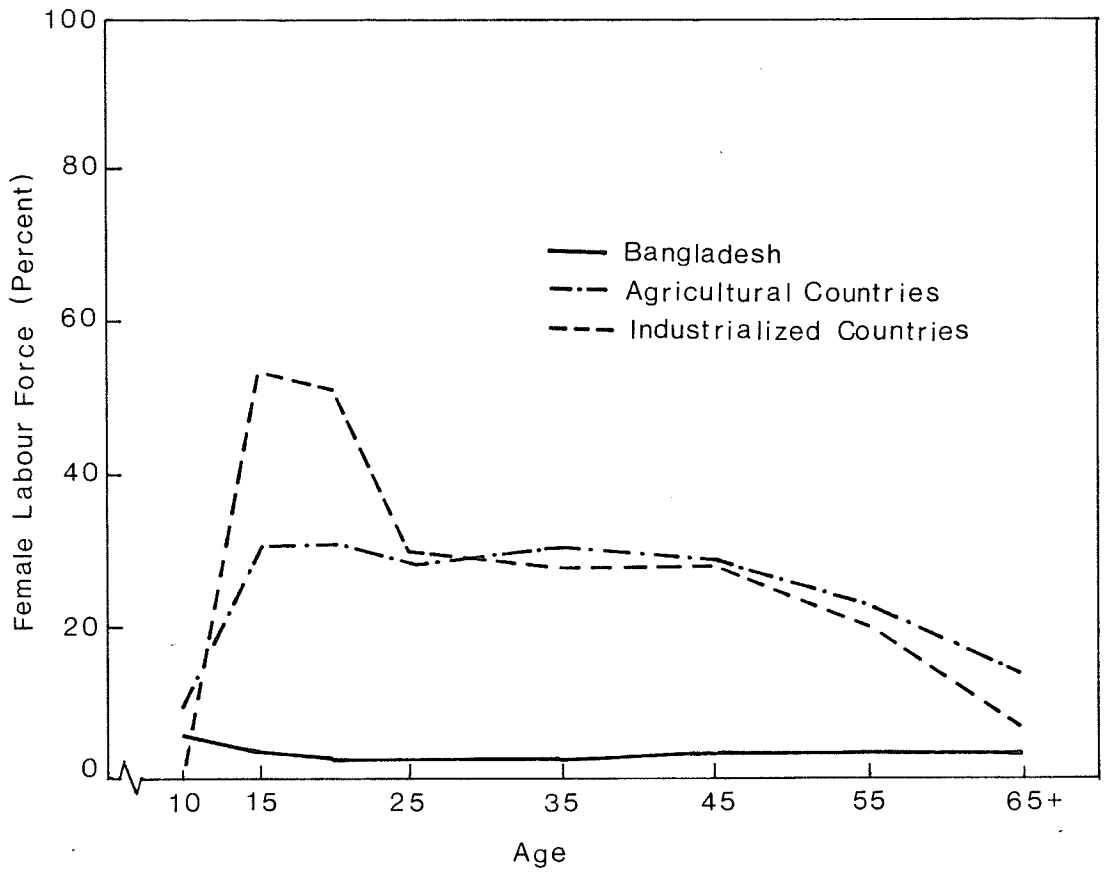

FIGURE 3.2 Average (Unweighted) Age-specific Female Participation Rates for Agricultural and Industrialized countries, and Bangladesh, 1974-1979

Source: same as Table 3.2.

TABLE 3.3 Average Female Participation Rates (Aged 15 years and Above) by Regions of the World and Muslim Countries, 1965-1968.

Region	Mean (μ)	Standard Deviation (σ)	Coefficient of Variation (V)	Number of Countries (N)
Africa	36.3	18.0	49.6 %	18
Non-Muslim African Countries	37.1	15.8	42.6	14
America	29.7	14.6	49.2	26
Asia	34.2	22.2	64.9	24
Non-Muslim Asian Countries	40.8	20.2	49.5	15
Europe	35.6	14.0	39.3	23
Oceania	28.1	16.6	59.1	11
Muslim Countries*	23.3	20.0	85.8	13

Source: Bean, L.L. (1968) 'Utilization of Human Resources: The Case of Pakistan', International Labour Review, 97(4):396.

* The countries included are: Bangladesh, Brunei, Indonesia, Iran, Iraq, Jordan, Malaysia, Morocco, Pakistan, Sudan, Syria, Tunisia, Turkey and United Arab Republic (Egypt).

for comparison. As shown in Table 3.3, if Muslim countries in Asia are excluded, the average female participation rates rises by 6.6 percentage points. No similar difference is apparent in Africa, however. Among the 13 countries under consideration, seven showed lower female participation rates in the Muslim world. The average for these countries was 23.3 percent of the total female population, showing the largest dispersion (V = 85.5%). However, the low degree of difference of the African Muslim countries compared with other continental countries is supposedly caused by a relatively higher participation in them, and

homogeneous characteristics of underdevelopment within the rest of the African countries. Nevertheless, in African Muslim countries, a sizable population is non-Muslim by faith, especially in Sudan. Also, a direct European influence was prominant in these countries. In Asia, Turkey, Indonesia, and Malaysia showed higher female participation rates. Turkey has a long tradition of "women emancipation" since the 1930s (Luke, 1955:183, 207-209). Indonesia and Malaysia have a multi-ethnic population composition and the non-Muslim segments may account for higher female participation rates. This, in turn, suggests that a low rate of female participation is generally associated with societies where Islamic values and beliefs predominate.

In the Bangladesh context, several studies on female employment and occupation indicated that the roles of females traditionally have been determined as domestic, "—a docile daughter, a compliant wife and a dependent mother" (Choudhury and Ahmed, 1980:5). The religio-cultural beliefs strongly consider females as inferior to males (Jahan, 1975: 1-32). Consistent with the Islamic teachings and laws of explicit male preferences in economic functions revealing that "man is the earner and woman is the server of man", the means of production, i.e., land and capital, are controlled by the male segment of the society. The Islamic law of property inheritance gives a major share of land and personal property to the male segment of the society. This facilitates their social and legal control of resources in general, and results in limited opportunity for females to be involved in economic functions and activities. In all, Islam evidently adversely affects female participation rates in the underdeveloped Muslim countries like Bangladesh.

Also, there are reasons to believe that low female participation

rates in Bangladesh and other underdeveloped countries are partly caused by using "western" concepts and definitions in census enumeration of the labour force. In spite of purdah restriction, females contribute substantially to the productive efforts, particularly in rural areas (Choudhury and Ahmed, 1980:4-7; Islam, 1974; Rahman, 1978; 105-109). In the family-based peasant economy, females have to undertake more time consuming jobs, such as husking, seed processing and preservation, winnowing, transplanting, fuel processing, poultry farming, in addition to their domestic obligations. But because these functions supplement the men's work, they are not considered as a contribution to family income. The activities are often seen as extensions of domestic labour when undertaken by females. Female activities are thus neither included in the measure of the GNP nor in the labour force enumeration.[3] However, all these factors in an aggregate contribute to a very low participation rate of females in the country.

Activity Rates by Rural-Urban Residence

The rural-urban classification of population is largely a function of the industrial composition of the economy; to a large extent it reflects the relative importance of agricultural and non-agricultural activities as source of livelihood. Thus, a comparison of data for rural and urban segments serves to show the influence of agricultural and non-agricultural activity participation levels on the labour force.

Distinct rural and urban activity patterns are discernable in Table 3.4. In Bangladesh, the urban areas as a whole have only 3.7 percent higher participation rates than in rural areas for both sexes.

As discussed above, the early entrance into the agricultural labour force and continued participation to old age in rural areas, led to higher age-specific activity rates at ages 10-24 and 65 years and over than found in urban areas. Lack of adequate educational opportunities, in terms of both physical facilities and human resources, and the absence of social security schemes in rural areas primarily caused these urban-rural differences. It may be pointed out that a much higher school enrolment and literacy rate exists in urban areas, especially in lower age cohorts, and this inversely affected activity rates. However, after graduating from the schools, a significant population enter the urban job markets and strengthen the activity rates in the 25-54 age cohorts. Part of the explanation of low activity rates in young age cohorts (below 25) seems to be related to the pronounced problem of unemployment in cities of underdeveloped countries.

TABLE 3.4 Age-Sex Specific Activity Rates by Urban and Rural Residence, 1974 (Percentages).

Age-Cohort	Urban			Rural		
	Both Sexes	Male	Female	Both Sexes	Male	Female
10-14	18.5	23.2	7.1	26.7	43.7	6.3
15-19	31.8	54.1	4.3	39.0	69.5	4.6
20-24	47.1	75.1	4.6	42.4	85.6	3.0
25-34	60.1	94.6	5.6	47.8	97.3	2.6
35-44	59.2	97.6	6.8	53.3	99.1	3.0
45-54	63.4	95.5	7.0	54.8	98.6	3.4
55-64	55.5	87.3	5.4	55.3	96.6	3.9
65 years and over	39.5	66.0	3.4	50.8	85.4	3.3
Total (all ages)	32.1	54.1	3.8	28.4	52.9	2.4

Sources: Calculated from: Appendices II and III.

Moreover, activity rates among the females are lower in each age-cohort in the rural areas compared to those of urban areas. The only exception to this is in the 15-19 years cohort. This is due to the fact that occurrences of marriages in these ages are prevalent in urban areas, which in turn lowers the activity rates temporarily. However, low female activity rates in adult age cohorts lowered the overall participation rate considerably in rural parts of the country.

Spatial Dimensions of Labour Force Activity[5]

The size and relative proportion of labour force to population for a region or geographical unit generally reflects the dimension of the level of human resource utilization *vis-a-vis* the level of economic development. Figure 3.3 shows the patterns of absolute size and the relative proportion of persons in the labour force and persons not in the labour force, i.e., manpower categories, in the districts of Bangladesh for 1961 and 1974. However, the eastern and central districts, specifically Dacca, experienced an enormous increase in the size of population 10 years and over. The regional variations in the size of the manpower and corresponding categories, including the labour force, can easily be depicted from Figure 3.3, which is, in general, related to the size of area available in each district. A closer and more appropriate analysis can be formulated if the relative proportions of the labour force to the total population and their inter-regional distributions are considered. This is attempted in the following section.

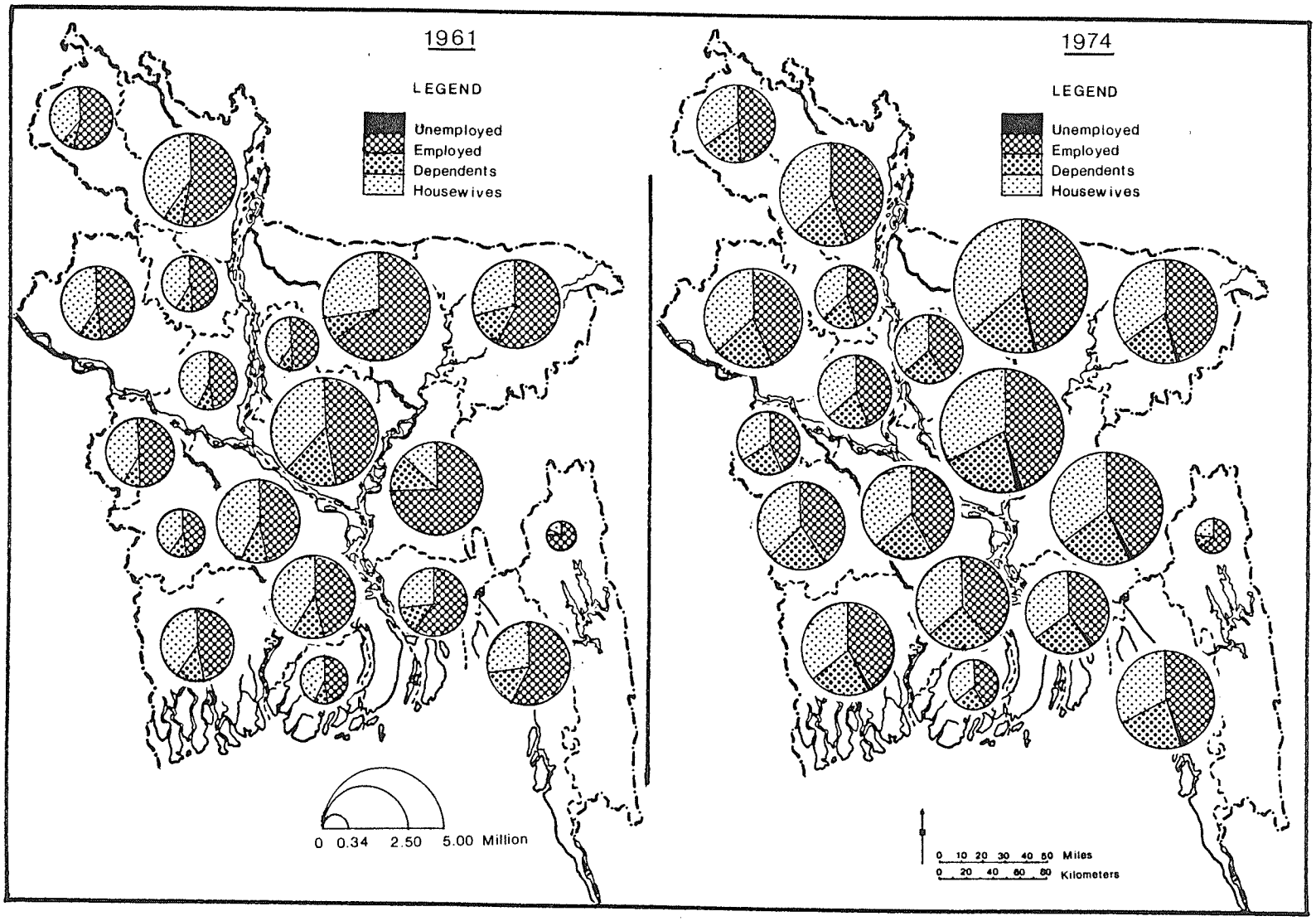

FIGURE 3.3 Proportional Distribution of Manpower Categories by District, 1961 and 1974

Source: Haque, C.E. (1977), Spatial Structure of the Labour Force in Bangladesh, M.A. thesis (unpublished), (Jahangirnagar University: Department of Geography):71.

Spatial Distribution of Participation Rates

In 1974, out of 64.8 percent of total manpower to the total population in Bangladesh, only 28.7 percent registered as the labour force. The spatial distribution of the labour force among the districts of the country ranged from 26.0 percent (Jessore) to 44.0 percent (Chittagong Hill Tracts)(μ = 29.1; σ = 3.9; see Appendix IV). The coefficient of variation (V) of 13.5 percent signifies that no considerable dispersal exists in the distributional pattern. However, three broad generalized zones of the labour force can be identified from figure 3.4:

1. low labour force zones in western and southern Bangladesh;
2. moderate labour force zones in the central and northern part of the country; and
3. high labour force zone in south-eastern districts.

Out of the 19 districts, thirteen registered "low" participation rates in 1974. All of the western districts located at the western part of Jamuna-Brahamaputra flood plain and Gangetic delta; and some of the south-eastern districts of Meghna flood-plain were included in this category. These cover the old alluvial plain in the north and an area of old moribund rivers and deteriorating drainage with practically no widespread inundations in the south-western delta area. The soil of this zone is also relatively less fertile. The "low" participation rates in these areas may be attributed to a considerable extent to the disadvantaged transportation system as well as lack of industrial and other non-agricultural pursuits. The only exception among the western districts was Dinajpur, recorded in the "moderate" category of labour

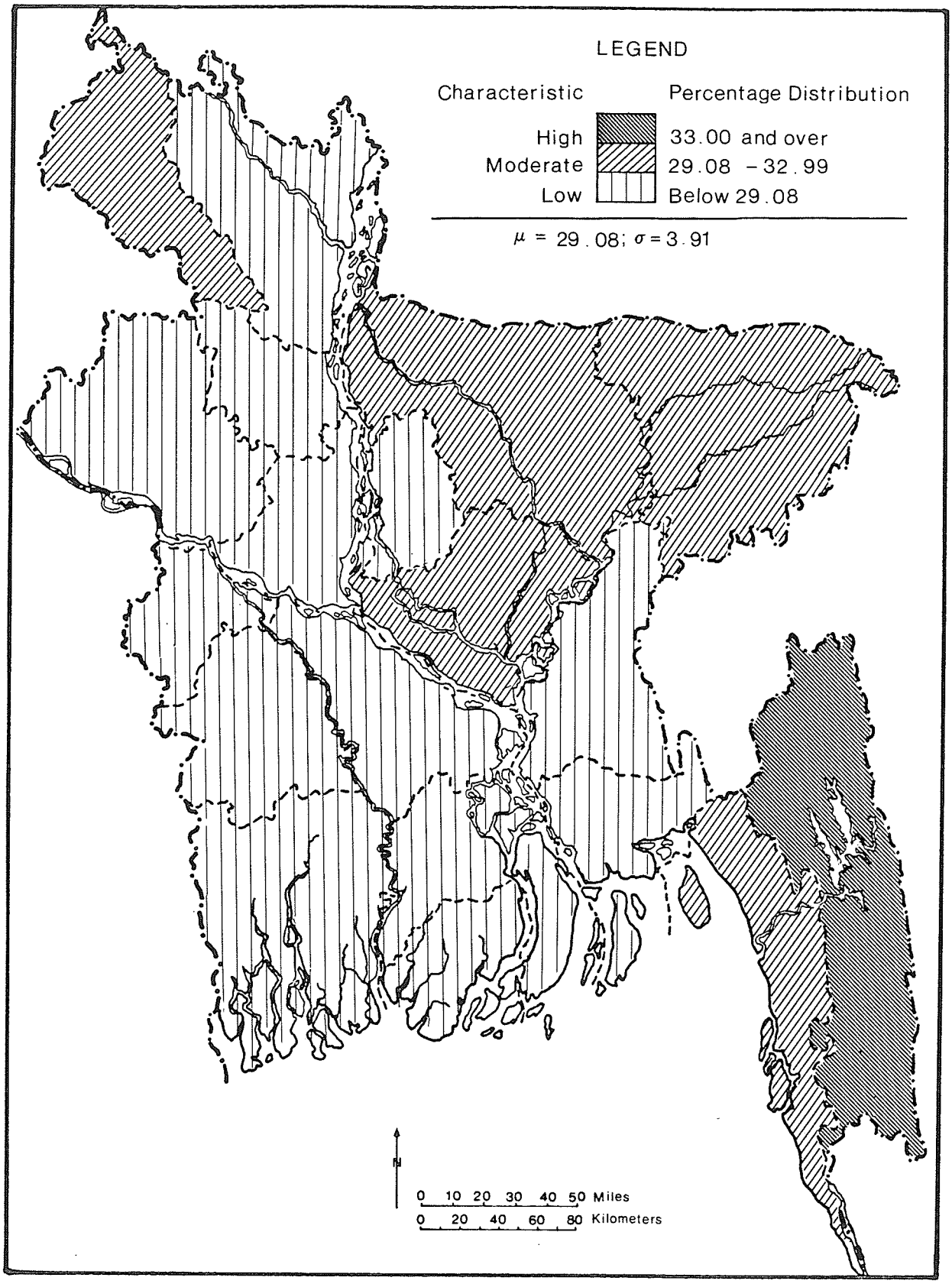

FIGURE 3.4 Patterns in the Distribution of Participation Rates for Both Sexes, 1974

Source: Appendix IV.

force participation rates. This is supposedly due to her potentiality in rice cultivation compared to other areas of the country, and her capacity to absorb a relatively larger agricultural labour force. The same explanation is also applicable to the districts of Mymensingh and Sylhet, which possess very fertile and sparsely populated haor (depression)[7] areas. The district of Dacca, the capital city and highest concentration of non-agricultural establishments, recorded in the "moderate" category of participation rates. Chittagong, known as the port and industrialized district, had reladively more working population in industrial and service sectors. Two districts of high density zone population distribution (Noakhali and Comilla), which had a high agricultural advantage in flood-plain soil, although recording "moderate" or "high" participation rates in 1961, remarkably showed a "low" proportion in 1974.[8] The high man-land ratio (see chapter 1) and saturation in agricultural employment, together with experiences from tidal cyclone and natural hazards in the past decades, may have provoked a high incidence of out-migration from these districts.

Chittagong Hill Tracts is the only district which registered a "high" proportion in the labour force. This is because about 70 percent of her total population belongs to tribal ethnic groups, by religion mainly Buddhist. Significantly, Buddhism encourages female participation along with men in income generating and wage earning efforts in agricultural and other work outside the home. Thus, females in this district usually take part in outside work like jhum cultivation (slash and burn agriculture) and other field work. Among the tribes like Chakma, Magh, Morang, female participation in lumbering, gathering, and cultivation is deeply rooted in their customs. Females are free

from social taboos and prejudices among the tribes, unlike other areas of Bangladesh. Again the tea plucking labour force in the tea-gardens involves the womenfolk in this district.

Nevertheless, in order to examine more intensively the participation rates by district, it is perhaps worthwhile to analyse these by each sex separately.

Spatial Distribution of Participation Rates of the Male Labour Force (MLF)

Although the proportion of the total labour force is about one-fourth of the total population in the country as a whole, males contribute the most. According to the 1974 census, about 53 percent of the total male population participated in economic activities, while the female proportion remained at the negligible level of only 3.42 percent of the total female population. Therefore, it is apparent that the major dependency burden in the economy of Bangladesh comes out of the female population.

However, the spatial distribution of the participation rates of the MLF ranged from 49.5 percent (Jessore) to 61.4 percent (Chittagong Hill Tracts)($\mu = 53.0$; $\sigma = 2.8$; see Appendix IV). From Figure 3.5a, it is seen that 12 districts showed a below the national average condition in the distribution of MLF. The patterns appeared to be similar to that of the distribution of the total labour force among the districts. The only exception is Rangpur district, which registered a "low" total labour force but a "high" MLF condition. Moreover, the district of Sylhet recorded a "moderate" total labour force condition

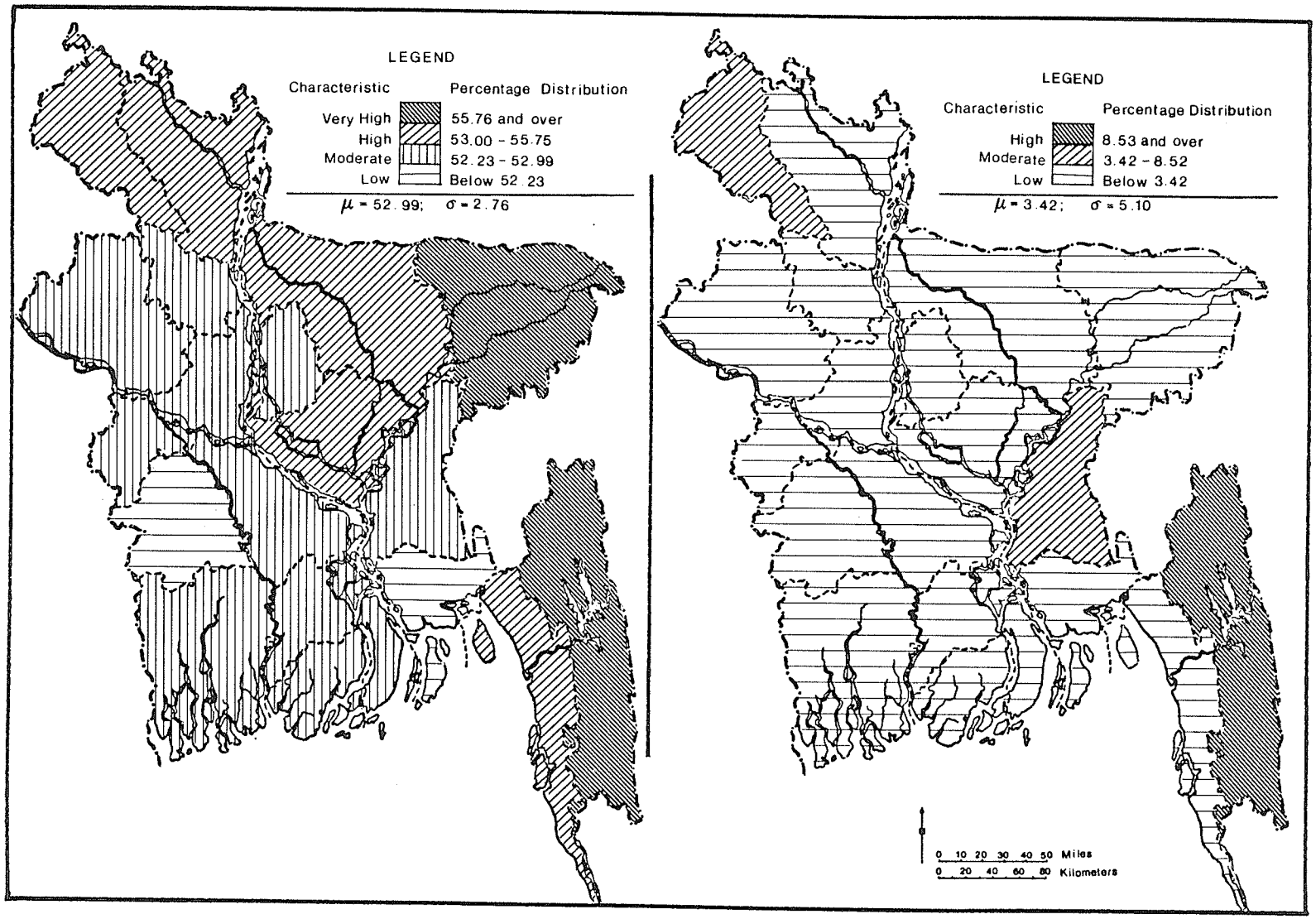

FIGURE 3.5 Patterns in the Distribution of Participation Rates by Sex, 1974

Source: Appendix IV.

but "very high" MLF. This is supposedly affected by significant sex selective seasonal migration every year from Comilla and Mymensingh to this district (Figure 3.6). Because the census was taken during the winter crop harvesting in 1974, this is likely to inflate the MLF in this district. The patterns of the remaining "high" MLF can be seen as consistent with the total labour force distribution and related explanations, primarily because of the fact that the major weight and volume to the total labour force come out of the MLF.

Spatial Distribution of Participation Rates of the Female Labour Force (FLF)

As mentioned above, only 3.4 percent of the females in the country as a whole were reported as economically active. This can be explained primarily due to definitional limitations in the census enumerations. In a traditional economy like Bangladesh, the application of a market economy based concept in surveying and analysing data on labour force is bound to give such ambigious results.

However, the distributional characteristics of the FLF among the districts showed a considerable percentage of dispersal in their patterns, ranging from only 1.1 percent (Jessore) to 24.1 percent (Chittagong Hill Tracts) (V = 149.1%; see Appendix IV). Except the district of Chittagong Hill Tracts, the remaining districts showed quite uniform patterns. The measurement of coefficient of variation was largely affected by the extreme FLF in the Chittagong Hill Tracts district. However, only Comilla and Dinajpur registered "moderate" FLF and the rest of the districts grouped into the "low" proportion

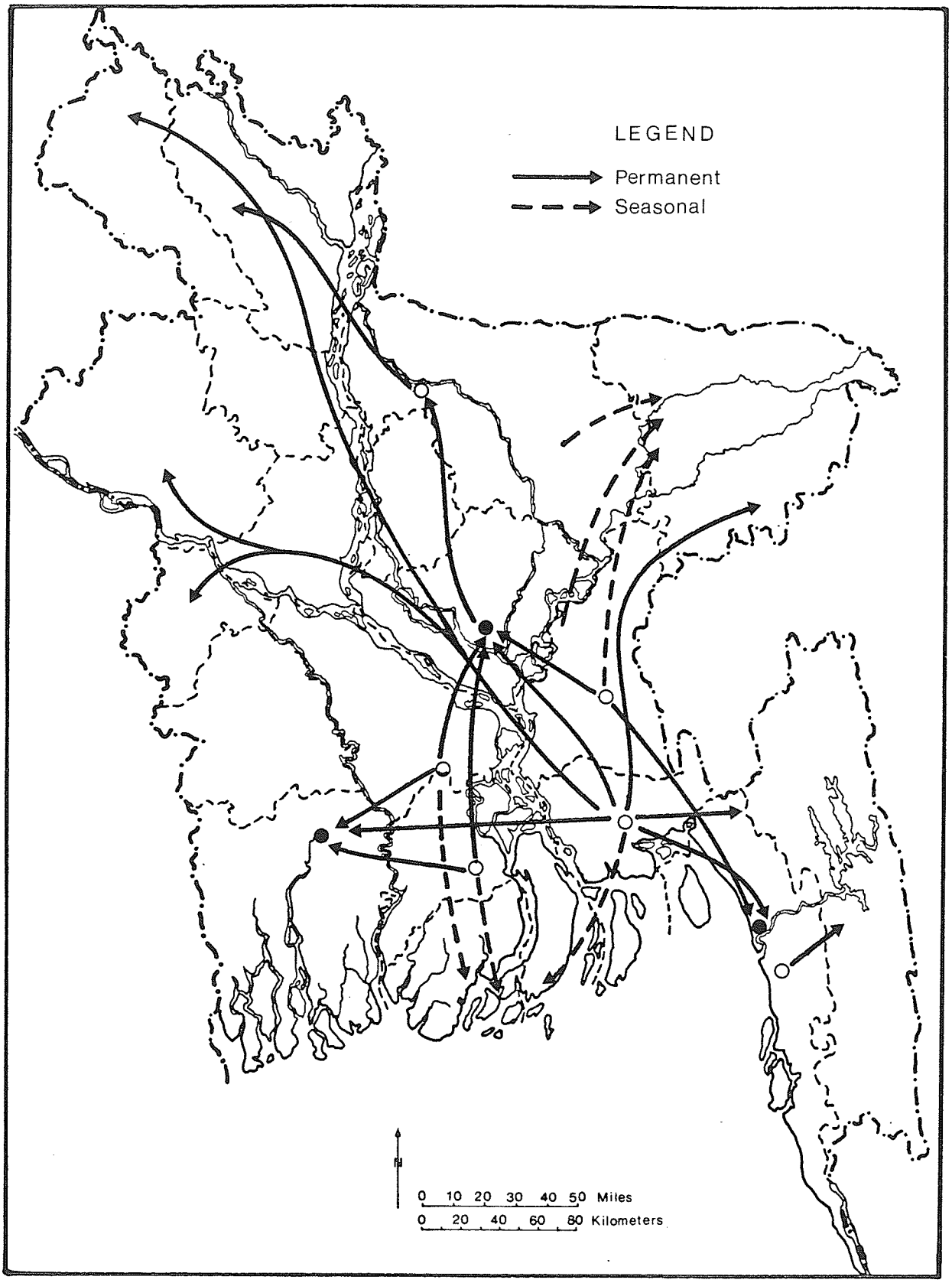

FIGURE 3.6 Patterns of Internal Migration

Source: Rashid, H.E. (1977), Geography of Bangladesh (Dacca: University Press):511.

of FLF. As mentioned above, the exceptional case of the Chittagong Hill Tracts was mainly attributed to the positive attitudes towards female economic activity among the tribes by the social customs and taboos. The overall low participation rate of the FLF in most of the districts was caused by a number of factors: first, the under-estimation of unpaid female workers; secondly, the under-reporting by the female workers to avoid social stigma; thirdly, prevalence of Islamic beliefs and values in rural Bangladesh; fourth, the traditional nature of the household work.

In this respect, Sinha's hypothesis that the initial stage of industrialization would register low activity rates for the females and in the later stage a higher rate is particularly relevant (Sinha, 1965:253-263). Bangladesh is undergoing a low degree of industrialization since the beginning of the present century, and this will be discussed in detail in the following chapter. However, given the hypothesis, the participation rate for females is likely to remain low or unchanged for a long period of time, unless there is a significant and dramatic change in the social and economic systems of production.

Summary

The majority of the labour supply in Bangladesh has always been contributed by men. In both developed and underdeveloped countries, almost every male adult between the age cohorts 25-55 is in the labour force. As a result of the young age structure of the population, the average male participation in agricultural countries has been lower than the average for industrialized countries, which have had more

favourable age structures. In agricultural countries, however, the deficiency in age structure was partly compensated for by higher participation of males in economic activities in both young and old age.

The overall low participation rates in many of the underdeveloped countries were mainly caused by meagre female participation, especially in Muslim countries. In Bangladesh, the female participation rate was among the lowest of any comparable countries of the world. This was primarily the result of three factors: first, the proscription of female work outside the home by the strict purdah belief; secondly, this proscription results in the under-reporting of female employed persons; and thirdly, the application of the principle that "a person be a wage earner, be self-supporting or partially self-supporting to be included in the labour force" during the census enumerations excluded the females who substantially perform the post-harvesting and other agricultural activities. It should be mentioned that Islamic laws and values of explicit male preference, nevertheless, hinder significantly female participation in the underdeveloped Muslim countries.

The spatial dimensions of the labour force in Bangladesh are reflected in their distributional patterns among the districts in the country. The patterns of distribution of the MLF showed a low degree of variation (V = 5.2%), while females indicated a much diversified pattern (V = 149.1%). The greater range of variation in the inter-district patterns of FLF was caused by an overwhelming rate recorded for the Chittagong Hill Tracts district. But, as discussed above, the remaining districts showed quite a uniform pattern of "low" FLF, affected by the socio-economic and religio-cultural factors. The

distribution of MLF varied primarily following the advantages of physical characteristics of different regions, as well as the preceding historical and socio-economic processes. Thus, agriculturally potential areas of northern districts showed "high" participation rates, together with the relatively industrialized districts. In sum, since the MLF constituted about 95 percent of the total labour force in the country as a whole, it represented the overall patterns.

Finally, this is to mention that in the analysis of this chapter, labour force dimensions were confined to only demographic and geographic aspects in both national and international contexts. But the structural characteristics of the labour force are no less important in respect to the dimensions of economic and regional development. More specifically, in order to examine the pattern of the division of labour and the contributions of the various sectors to the total economy, the analysis of the spatio-structural characteristics needs to be made. These aspects are analysed in the following chapter.

CHAPTER 4

SPATIO-STRUCTURAL CHARACTERISTICS OF THE LABOUR FORCE

This chapter deals with two major questions of labour force characteristics in Bangladesh. Firstly, it examines trends in the composition of labour force sectors in Bangladesh, focusing upon the national level structure. Secondly, it investigates the forms of regional labour force structures within a country. In other words, it intends to determine the inter-regional disparities in terms of employment distribution vis-a-vis development in general. Indeed, from an empirical point of view, this investigation into the structural composition of the labour force, both at the national and regional levels, will indicate the way the evolution of the economic structure took place in the country as a whole, as well as where and how people are organized to earn their livelihood in production of goods and services.

Evolution of the Structural Composition of the Labour Force, 1900-1960

In chapter 2, trends in labour force participation rates were analysed in relation to population structure and growth. In this section, the focus is on the structural evolution of the labour force, based upon the broad economic sectors of agriculture, industry, and service. These broad economic sectors follow the conventional categorization,[1] as follows:

(1) agriculture, comprising agriculture, forestry, hunting, and fishing;

(2) industry, comprising mining and quarrying, manufacturing, construction, and utilities (electricity, gas, water, and

sanitary services); and

(3) services, comprising commerce (retail and wholesale trade), transport, storage, communications, social and private services.

With reference to the earlier discussion in chapter 1 of theoretical considerations underlying this thesis, it is worthwhile to restate the propositions developed by proponents of "development stages theory of growth". Colin Clark (1940, 1957), a pioneer in this field, suggested that in the process of development, the proportion of the agricultural labour force declines and that of the industrial sector increases. This is because the relative demand for agricultural goods falls with increasing income while the demand for manufactured goods rises. Subsequent economic growth increases the relative demand for tertiary services, and these eventually grow and outweigh the industrial labour force in the economy (Clark, 1957:493-95). Clark used data from "western" countries to support his hypothesis. He dealt with the period from the mid-nineteenth century to early twentieth century. Such data for selected countries are presented in Appendix V. As shown in Appendix V, the proportion of agricultural labour force of these countries experienced a consistently gradual decrease. The share of the industrial labour force, however, increased up to a certain level in each country (more than 30 percent of the total labour force), but then "stabilized" or even declined slightly. The service sector grew proportionately throughout the period.

Bairoch and Limbor (1968) subsequently examined Clark's propositions in a world regional context, during the period 1880-1960. They concluded that:

> "On the whole, the changes that have occurred in the structure of the labour force in the developed countries fit well into the pattern emphasized by Colin Clark, ... namely a gradual shift of the labour force from agriculture, first to industry and then to services" (Bairoch and Limbor, 1968:320).

Bairoch and Limbor also added to this proposition that the change which occurred in the agricultural sector in developed countries in the 17 years between 1950 and 1967, were as great as the change that took place over the previous 60 years from 1890 amd 1950. This, moreover, involved not only a reduction in the percentage of the agricultural labour force, but also in figures of the actual number of persons released from this sector. With respect to the industrial sector in the developed countries, they found that the "stabilization" concept proposed by Clark was not necessarily empirically demonstrated. This was because of the aftermath of the World War II, which resulted in the industrial proportion of the total labour force again starting to increase. But even more striking was the increase in the service sector, which accelerated rapidly during and after the 1950s in the developed countries. This growth was at the expense of the labour force employed in the agricultural sector. The "stabilization" of the industrial sector in the developed countries was influenced by the replacement of coal by petroleum and natural gas as the main source of energy. This greatly reduced the proportion of the labour force engaged in mining and quarrying. Also, the economic recession during the two World Wars adversely affected industrial growth for some time. However, "stabilization" in industry should only be considered as a temporary phenomenon in the context of developed countries, since its growth pattern is still proceeding without any static position in the proportion of the total labour force in these countries.

TABLE 4.1 Trends in Labour Force Structure and Growth by Economic Sector and Region, 1900-1960 (Percentages)

Region/ Country	1960			1950			1930			1920			1900		
	Agr.	Ind.	Ser.	Agr.	Ind.	Ser.	Agr.	Ind.	Ser.	Agr.	Ind.	Ser.	Agr.	Ind.	Ser.
All Developed Countries[1]	30.5	33.5	36.0	38.7	29.7	31.6	50.1	24.2	25.7	54.7	23.3	22.0	59.4	21.7	19.0
Europe[2]	17.0	43.9	39.1	25.0	40.2	34.9	29.7	38.0	32.3	34.3	36.4	29.3	39.2	25.9	25.1
North America	7.3	36.3	56.4	12.9	35.5	51.6	23.3	32.4	44.4	28.2	34.9	36.9	38.3	30.8	30.9
Underdeveloped Countries[3]	70.7	11.5	17.8	73.3	9.9	16.7	76.6	10.0	13.4	77.6	9.9	12.5	77.9	9.8	12.3
South-East Asia	73.1	10.5	16.4	75.3	8.8	16.0	76.8	10.2	13.1	77.5	10.4	12.2	76.4	10.8	12.8
Bangladesh[4]	86.4	5.5	8.2	84.8	5.0	10.2	81.4	8.2	10.3	86.1	5.9	8.0	85.1	11.9	3.0

Sources: Bairoch, P. and Limbor, J.M. (1968), 'Changes in the International Distribution of the World Labour Force by Region, 1880-1960,' International Labour Review, 98(4):326-27.

Government of Bangladesh (1977), Bangladesh Population Census Report, 1974: National Volume (Dacca: Bureau of Statistics): Tables 14, 15, and 16.

1 Including the U.S.S.R. and Eastern Europe
2 Excluding the U.S.S.R. and Eastern Europe
3 Excluding Peoples' Republic of China, North Korea, Mongolia, and Vietnam (North)
4 In the 1974 census, the percentages of agriculture, industry, and services to the total labour force were 79.0, 4.9, and 16.1 respectively.

The general theoretical assumptions relating to sequential transformation of labour force sectors need to be closely reviewed to determine their appropriateness for the study of underdeveloped countries. Specifically, their relevance to those countries which have had an experience of long colonial rule and exploitation should be questioned. This is because developed countries initially accomplished their economic growth through the process of industrialization, in which the raw material bases were drawn from their colonial domains. In contrast to developed countries, as Andre Frank (1966) has pointed out, the present underdeveloped conditions in the former colonies is the consequence of a historical process of "underdevelopment", and is not a product of any inherent traditional characteristics of these societies. Table 4.1 shows the trends in labour force structure in some selected regions of the developed and underdeveloped world for the period 1900-1960. Figures for Bangladesh are also included for comparison. Throughout this period, in contrast to that of the developed countries, the economic sectors of the underdeveloped countries of South-East Asia as a whole were dominated by the agricultural sector, with more than 70 percent of total labour force engaged in this activity. Within South-East Asia, Bangladesh's economy has had an even greater dependence upon agriculture, with more than 85 percent of its total labour force engaged in agriculture for this period.

Gunnar Myrdal (1968:413-527) examined this condition in South-East Asia and attempted an explanation of its causes. He identified that colonial domination in the region was responsible for the failure in generating a process of capital accumulation in agriculture. Since

historical periods, the region has experienced a high population density through the existence of favourable ecological conditions. On the other hand, prevalence of subsistence agriculture provided inherent underemployment conditions and very low level productivity in this sector. Also, because of a higher rate of new entrants to the labour force, manual-labour, instead of new technology, has always been considered more desirable since it absorbs a larger population. In addition to these, the penetration of cash-crops (such as jute, sugar cane, tea, and cotton) to the agricultural cropping pattern resulted in peasants becoming more interested in "market opportunities" rather than the advantage of "technological opportunities" (Myint, 1964:51). All these factors are reflected in the low production level of agriculture in the region.

In the absence of sufficient surplus production and reinvestment in manufacturing and other industries, the industrial sector in South-East Asia remained constant in the economy, with only around 10 percent of the total labour force (Table 4.1). But closer observation shows that in South-East Asia as a whole, and in Bangladesh in particular, the industrial sector followed a slowly declining trend. Gradual replacement of traditional industries like crafts, weaving, handloom, small cottage and metal industries by the importation of manufactured goods from the industrialized nations, released a sizable non-agricultural labour force during the colonial regime (Myrdal, 1968:453; Arthur and McNicoll, 1978:31-32). Lamb's (1955) judgement on British policy in India can be taken as generalization:

> "The coming of unrestricted British enterprise to India precipitated the development of the Indian economy on colonial lines. In stepping up the supply

> of raw materials, the British stimulated Indian economic development. In pressing for conservation of India into a market for British manufacturing goods, the British inhibited India's own manufacturing industries and gradually converted India into an agricultural hinterland of Great Britain" (Lamb, 1955:465).

The introduction of formal education during the colonial period in the underdeveloped countries stimulated the expansion of the service sector. The purpose of introduction and subsequent diffusion of the formal educational system was primarily based in the need to support administrative and professional manpower requirements during the colonial regime. Following World War II, and after the independence of many of the colonialized countries, the greater demand for new administrative and commercial services triggered opportunities for service sector employment. Population growth and accelerating pressure on land caused a mass uprooting from the rural areas. On the other hand, traditional bazaar and petty trading activities facilitated the absorption of a larger number of people into low income service employment. Scope for other employment in the informal sectors also contributed to accelerating service sector employment.

From the above discussion, it is evident that the trend in structural transformation of the labour force sectors in the underdeveloped countries does not follow a sequence that is identical to that of the developed countries. This can be attributed to differential historical processes experienced by the developed and underdeveloped countries. The prevailing set of orthodox values and low level of aspiration and expectation among the masses, as well as other backward socio-cultural institutions, retarded growth of industrial development.

It is worthwhile to examine the regional implications of the

national level trends in the labour force composition discussed above in underdeveloped countries like Bangladesh, because these countries are facing acute problems in their attempts at industrial development. In order to gain momentum of "trickle down" effects in a national economy, most national policies in underdeveloped countries have followed a policy of polarized growth since the 1960s (Appalraju and Safier, 1976:143-146).[2] In the next section, the patterns of regional labour force composition, and their parities and disparities will be analysed.

The Structural Composition of the Labour Force by Economic Sector and District, 1974

Given the conditions of imbalances in the national labour force structure in underdeveloped countries like Bangladesh, it is of interest from a geographic point of view to investigate the regional implications of such patterns. Specifically, as mentioned in Chapter 1, an understanding of regional employment by economic sector in terms of regional economic development is vital to the welfare and development of a country.

This section analyses the extent of sectoral concentration and dispersion of economic activities by district in Bangladesh. For this purpose, data from the 1974 census are used. Such analysis will help the understanding of how the process of polarization and underdevelopment may lead to uneven economic development *vis-a-vis* employment opportunities within a country.

Different measures can be used in determining the degree of concentration and dispersion in labour force structure between regions

within a country. One measure is the "location quotient" (IQ),[3] which is computed as the percent of the labour force employed in each sector or industry group in each region compared to the percent of the labour force employed in that sector or industry group for the whole country. Such a measure gives a closer approximation of geographical concentration and diversity of economic opportunities.

In this connection, it is important to gauge the inter-regional dispersion; that is, the deviation of each region's labour force composition from the national average as is illustrated in Table 4.2, and analysed by each sector separately.

The Agricultural Sector: It is not surprising to see the greater uniformity in the structure of agricultural labour force among the districts of the country ($\sigma = 10.6$; $V = 13.1\%$). Basically, this reflects the almost homogeneous slope and configuration of land; its uniform soil quality; the general availability of water; the almost evenly distributed human settlement; as well as other socio-economic variables, such as similar means of transportation and physical settings for accessibility to the markets, throughout the country.

From Table 4.2, both the importance of each sector of the labour force for a particular district, as well as place in the national picture, can be seen. The contributions of districts to the national agricultural labour force depends upon the respective area and population size in general. Variation in the distribution of the agricultural labour force between regions ranged from 1.20 percent of the national agricultural labour force size to 12.40 percent. Notably, the pattern of percentage distribution to the total national labour force size in a

TABLE 4.2 Regional Shares of the Labour Force by Economic Sector and Location Quotients*, 1974

District	Percent Share			Location Quotients (LQ)		
	Agriculture	Industry	Service	Agriculture	Industry	Service
Chittagong	4.59	8.62	13.45	0.74	1.39	2.16
Chittagong-Hill Tracts	1.20	0.71	0.75	1.09	0.65	0.68
Comilla	8.41	7.10	6.21	1.05	0.89	0.78
Noakhali	4.06	3.24	3.96	1.01	0.81	0.99
Sylhet	7.78	1.93	5.53	1.09	0.27	0.78
Dacca	7.31	30.32	24.35	0.65	2.71	2.18
Faridpur	6.09	3.07	3.49	1.10	0.55	0.63
Mymensingh	12.40	3.29	6.67	1.12	0.29	0.60
Tangail	2.93	3.46	1.51	1.07	1.26	0.55
Barisal	5.13	4.23	5.75	0.99	0.81	1.11
Jessore	4.54	2.77	3.24	1.07	0.65	0.76
Khulna	4.28	9.19	6.55	0.88	1.88	1.34
Kushtia	2.47	2.85	2.44	0.99	1.14	0.98
Patuakhali	2.23	0.82	1.39	1.10	0.41	0.69
Bogra	3.42	1.28	1.68	1.13	0.42	0.55
Dinajpur	4.37	2.68	1.80	1.13	0.69	0.47
Pabna	3.58	8.03	3.46	0.95	2.12	0.91
Rajshahi	6.33	3.42	3.72	1.10	0.59	0.65
Rangpur	8.79	2.91	3.97	1.14	0.38	0.51
Bangladesh	100.00	100.00	100.00	-	-	-

Source: Calculated from: Appendix VI.

* This is to note that the index is equal to unity where the proportion of a region's labour force in a specific sector or industry is the same as the proportion of the whole country's labour force employed in that sector. Indices different from one indicate the degree to which employment in a particular sector is over represented (LQ <1) or underrepresented (LQ > 1) in a given region. For furthur details see, Isard, W. (1960), Methods of Regional Analysis (Regional Science Studies Series: MIT Press):124.

specific sector (for example, the agricultural labour force for the nation as a whole) and for a specific district, may not show a similar pattern in the same sector when compared to the national agricultural position in relation to the total labour force. Thus, the position of labour force sector for each district is reflected through differential structural patterns between regions, and indicates the strength and weakness of labour force composition for each district to the national average conditions. For example, Dacca and Sylhet, or Khulna and Dinajpur had about the same share of the agricultural labour force in 1974, but the position of the agricultural sector within each of them was completely different when national average conditions in the distribution of each sector were examined (Dacca LQ = 6.5 and Sylhet LQ = 1.09; or Khulna LQ = 0.88 and Dinajpur LQ = 1.13).

The concentration of employment opportunities in the agricultural sector among the districts ranged from LQ of 0.65 in the Dacca district to as high as 1.14 in Rangpur district. Of 19 districts, only six showed below national average agricultural employment conditions. These were Dacca, Chittagong, Khulna, Pabna, and Kushtia. In all, an overall homogeneity of agriculture is well represented by the "localization curve" in comparison to other sectors of the labour force in 1974 (Figure 4.1). The "index of concentration",[4] which is 0.09 for agriculture, substantiates the proposition that the concentration of agricultural employment, with few exceptions, was relatively nominal or almost evenly distributed.

<u>The Industrial Sector</u>: The industrial proportion of the total labour force reached its lowest point over the last 74 years (1901-1974) in

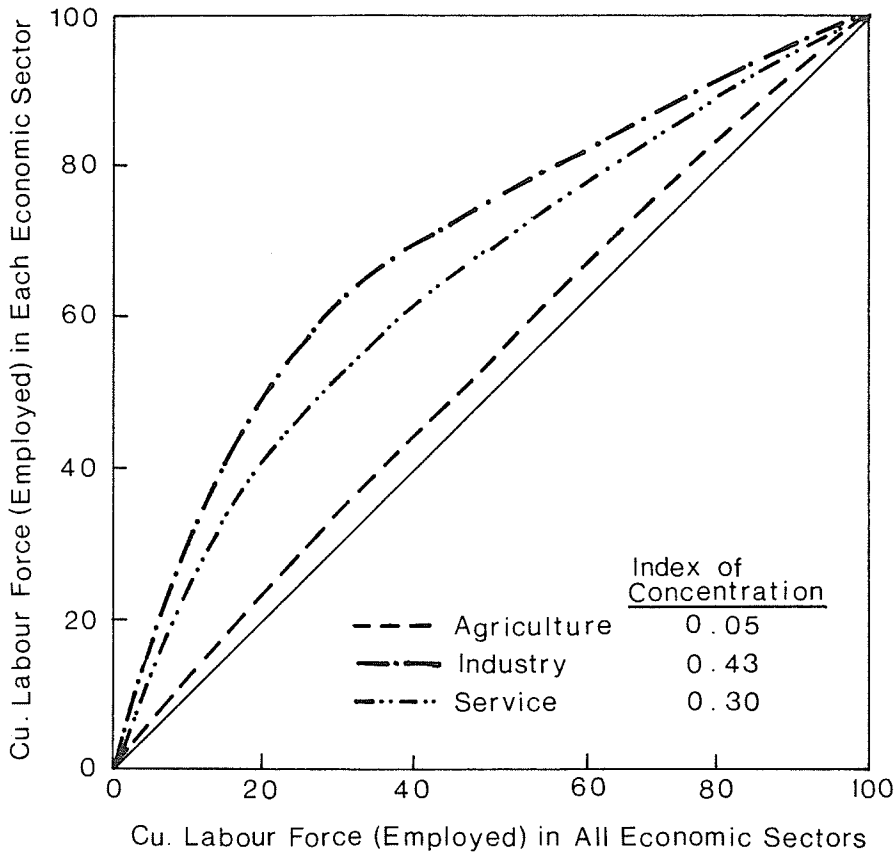

FIGURE 4.1 Localization Curve Comparing the Distribution of Labour Force (Employed) by Economic Sector, 1974

Source: Appendix VI.

1974, when it was only 4.94 percent of the total labour force. Theoretically, this sector is considered the most dynamic and effective for economic development of a country or region. This is because of the higher elasticity of demand which exists for industrial and manufacturing goods and services compared to agricultural products. Thus the extent of the labour force engaged in the industrial sector is often taken as a crude measure of the level of economic development.

From Table 4.2 and Figure 4.1, the considerable extent of concentration of industrial functions in Bangladesh can be observed. The index of concentration (I) for this sector was 0.44. Only Dacca district, the national capital, had about triple the national average industrial labour force proportion. Industrial concentrations above the national average were found in only five districts, namely, Pabna, Khulna, Chittagong, Kushtia, and Tangail. It is worth noting that Chittagong and Khulna, being the second and third largest urban concentrations, as well as having port facilities, ranked third and fourth respectively in terms of industrial employment distribution. The districts of Pabna, Kushtia, and Tangail presumably showed a higher industrial labour force concentration because of their small cottage and textile industries. Among the six districts with larger industrial employment concentrations, four of them, namely, Dacca, Pabna, Khulna, and Chittagong, altogether accounted for about 56.2 percent of the total national industrial labour force. The concentration of industries therefore does not offer to be proportionate to population and areal size of the districts, but rather, was influenced by historical and locational developments associated with the colonial purposes. For example, Dacca, with larger facilities of navigational accessibility,

developed as a trading and commercial center since the Mughal period (16th century). Further, the establishment of Dacca as the provincial capital of East Bengal in 1905 increased concentration of non-agricultural occupations in this area. The establishment of a port at Chittagong was determined by the need to export tea from the tea-plantation in the Assam hinterland area (Kamaluddin, 1974:77). Khulna port was a substitute for the port at Calcutta, and supported mostly jute export from the north and central Bengal hinterland areas. The other districts having higher than average industrial employment resulted from the conversion of local indigenous handloom cottage industries to the electric-powered factory industries, of which a part were established in the rural areas. Rashid (1977:454-57) cited that these handloom cloth and hosiery industries employed about 35 percent of the total industrial labour force during the 1960s, and were concentrated around Baburhat-Narshingdi (Dacca), Bajitpur-Tangail, Shahzadpur (Pabna), Santia (Kushtia), as well as in some other parts of the country such as Faridpur and Comilla. In this context, Sharif (1978:50-53) noted that:

> "... the handloom weaving industries are concentrated in five districts tracing their old tradition in the rural areas of these districts. They now use machine made yarn and use power looms."

He also pointed out that the prominence of places like Tangail-Bajitpur were sustained by a greater demand in Dacca City. Likewise Pabna and Kushtia generally catered to the needs of northern Bengal.

The remaining 13 districts have a below national average condition of industrial worker participation. Northern districts such as Sylhet (LQ = 027), Mymensingh (LQ = 0.29), Rangpur (LQ = 0.38), and Bogra (LQ = 0.42) appeared to the lowest regions. A greater regional disparity

in the distribution of industrial employment is clearly noticed by the coefficient of variation (V) of 61.5 percent (σ = 2.54) compared to that of 10.8 for the agricultural sector.

The regional concentration of the industrial labour force is attributed to the laissez-faire industrial locational policy followed by the then Government of Pakistan. In "a free market economy", without any deliberate policy, the establishment of industries tends to be agglomerated. Although such concentration of industries rationalizes some of the costs relating to distance factors, it also creates greater social and welfare costs. On the one hand, this process enhances regional disparities by making the contiguous regions labour and capital catchment areas. On the other hand, relatively excessive agglomerations require greater social investments in housing, health care, transportation and communications. These costs are at the expense of the national resource allocation for the remaining regions in particular.

The Service Sector: From Table 4.1, it is seen that among the non-agricultural labour force, the service sector has accounted for a relatively larger share of the total labour force since 1911. By 1974, the service sector had doubled the 1961 proportion, from about 8.2 percent of the total labour force to 16.0 percent. It is worth reiterating that changes in the service sector in underdeveloped countries like Bangladesh are characteristically different from the conditions in developed countries. This is because in the process of development, sharp increases in the relative demand for manufacturing goods in developed countries led to increasing demand for such services as transportation, communication, storage, finance, banking, and other

businesses and social services. These created a wide scope for the growth of the service or tertiary sector. Such services therefore played an essential and vital role, albeit indirectly, in the development process. In contrast, in underdeveloped countries, the major service sector was developed during the colonial era, for primarily administration purposes such as for law and order, and to implement and facilitate the supply of raw materials going from the hinterland areas to the colonial overseas markets. Consequently, the tertiary sector in countries like Bangladesh did not have a stimulating impact upon the development process as had been the case in the developed countries. Moreover, with the rapid population growth in recent decades and with the introduction of formal elementary education, the governmental sector absorbed the maximum proportion of the service sector labour force. A highly bureaucratic system evolved which contributed little to the development process. The remaining components of the service sector were of a traditional character, such as petty business and other informal sectors. The labour intensive bazaar system still dominates the flow of goods and services within the peasant economy.[5]

In Bangladesh, the regional pattern of concentration of the service sector was found to be higher than agriculture, but lower than industry (σ = 7.94; V = 53.2%; I = 0.44). This pattern indicates the existance of a considerable administrative base that was established during the colonial regime throughout the country. The contemporary urban super-structure of the country remains much the same in nature and character as it was during the colonial period. The heaviest concentration of the service sector was found in four districts, namely, Dacca, Chittagong, Khulna, and Barisal. With the exception of Barisal

district, three districts contained the "divisional headquarters", and were therefore in a privileged position for establishment of commercial and industrial complexes. The extent of the disparity in the service sector was considerable and was reflected in the uneven distribution of tertiary employment among the districts of the country.

Sex-Differentials in the Sectoral Composition of the Labour Force

The role of females and males had traditionally been differentiated within the family nucleus and within the society as a whole. In Bangladesh society such roles are particularly divided between activities that produce income to support the family and are generally performed by men, and activities such as housekeeping and the care of children that are generally performed by women. This distinctive pattern of participation in economic activities by males and females has already been examined in Chapter 2. However, it is of interest now to consider if there are significant differences in the sex-composition of the labour force among economic sectors.

Male and female participation in the labour force in 1974 by sector and by districts are presented in Table 4.3. The table shows that distributions differ in many respects. In terms of the agricultural labour force, male participation accounted for more than 60 percent of the total labour force in all districts, except Dacca and Chittagong. However, these two districts had also more than half of their male work-force in agriculture. The agricultural sector also accounted for the highest female participation in the labour force, but it did not dominate the pattern of female participation as greatly as was the case for males.

TABLE 4.3 Percentage Share of the Labour Force by Economic Sector and Sex, 1974

District	Male			Female		
	Agriculture (%)	Industry (%)	Service (%)	Agriculture (%)	Industry (%)	Service (%)
Chittagong	58.67	6.95	34.38	54.09	4.87	41.04
Chittagong-Hill Tracts	82.26	4.24	13.50	96.53	0.16	3.31
Comilla	82.75	4.46	12.79	88.90	3.39	7.71
Noakhali	80.25	4.04	15.71	76.64	2.36	21.00
Sylhet	86.76	1.29	12.04	78.06	2.28	19.66
Dacca	52.02	13.74	34.24	44.45	5.90	49.65
Faridpur	87.39	2.73	9.88	75.56	3.74	20.70
Mymensingh	89.20	1.49	9.31	78.13	0.97	20.90
Tangail	85.47	6.03	7.90	58.26	16.67	25.07
Barisal	78.71	3.96	17.33	59.85	6.64	33.51
Jessore	84.90	3.18	11.92	68.94	4.76	26.30
Khulna	69.84	9.36	20.80	51.30	6.62	42.08
Kushtia	79.54	5.52	14.94	39.71	12.03	48.26
Patuakhali	88.20	1.98	9.82	56.19	2.92	40.89
Bogra	89.44	2.12	8.44	78.88	1.21	19.82
Dinajpur	89.18	3.26	7.57	88.51	5.28	6.21
Pabna	75.77	9.87	14.36	45.64	30.36	24.00
Rajshahi	86.84	3.02	10.14	85.00	1.21	13.79
Rangpur	90.34	1.82	7.84	78.72	2.77	18.51

Source: Calculated from: Appendix VI.

In industry, males accounted for more than the national average (4.9 percent of the total male labour force belongs to the industrial sector) in six districts, namely, Chittagong, Dacca, Tangail, Khulna, Kushtia, and Pabna. Female participation in industry showed a greater dispersion pattern, ranging from 0.16 percent of the total female work-force in Chittagong Hill Tracts to as high as 30.4 percent in Pabna (Table 4.3). Nevertheless, nine districts have showed above the national average participation for females in industry. But only three districts had a considerably greater proportion of females employed in the industrial sector compared to the national average. The districts of Pabna, Tangail, and Kushtia recorded about 3.14, 16.7 and 12.0 percent respectively of the female proportion in industry to the total female labour force employed. As mentioned earlier, this pattern is primarily attributed to the characteristics of small-scale textile and handloom industries, prevalent in these districts, which can provide jobs for a larger uneducated and unskilled female labour force.

A higher participation of females than males has been found in the service sector in the country as a whole. In Dacca and Kushtia districts, moreover, the service sector actually dominated female labour force participation. In the districts of Dacca, Kushtia, Patuakhali, Chittagong, and Khulna, females in the service sector accounted for about 40 percent of the total female work-force. Some of these districts are relatively urbanized and industrialized in comparison to other parts of the country.

In Bangladesh, more than 96 percent of the total labour force is contributed by the males, thus duplicating the pattern of the total labour force. Sectoral aspects for both sexes combined have been

TABLE 4.4 Distribution of Male and Female Labour Force by Economic Sector, 1974 (Percentages)

District	Agriculture		Industry		Service	
	Male	Female	Male	Female	Male	Female
Chittagong	96.04	3.96	96.96	3.04	94.93	5.07
Chittagong-Hill Tracts	71.25	28.75	98.64	1.36	92.22	7.78
Comilla	93.00	7.00	94.95	5.06	95.95	4.05
Noakhali	97.32	2.68	98.35	1.65	96.29	3.71
Sylhet	95.49	4.51	91.51	8.41	92.11	7.89
Dacca	96.29	3.71	89.10	10.90	93.87	9.13
Faridpur	97.97	2.03	96.80	3.20	95.21	4.79
Mymensingh	97.05	2.95	97.79	2.21	92.76	7.24
Tangail	98.49	1.51	94.16	5.84	93.80	6.20
Barisal	98.05	1.95	95.79	4.21	95.18	4.82
Jessore	98.13	1.69	96.95	3.05	95.55	4.45
Khulna	97.66	2.34	97.75	2.25	93.81	6.19
Kushtia	98.82	1.18	95.03	4.97	92.77	7.23
Patuakhali	97.56	2.44	94.53	5.47	85.94	14.06
Bogra	96.87	3.13	97.87	2.20	92.08	7.92
Dinajpur	92.56	7.44	88.41	11.59	93.76	6.24
Pabna	98.14	1.86	91.24	8.76	95.04	4.96
Rajshahi	94.82	5.18	97.81	2.19	92.95	7.05
Rangpur	96.93	3.27	94.44	5.56	91.60	8.40

Source: Calculated from: Appendix VI.

discussed in the preceding section. If the patterns for females are analysed by districts and sectors, their contributions as well as differences from the males are likely to appear. In Table 4.4, the position of females in the economy by sector is shown. Their most important role was in the service sector, accounting for about six percent of the total service employment in the country. Only in one district, Patuakhali, females registered about 14 percent of persons employed in services. Another extreme picture can be seen in the case of females in agricultural works in the district of Chittagong Hill Tracts, where their participation is very much above the national average. The tribal and Buddhist religious values largely encourage female participation in economic activities, particularly in the agricultural sector.

Table 4.5 summarizes measurements of regional distribution patterns of different economic sectors by sex. The coefficient of variation values indicate that the highest disparity was recorded for females in the industrial sector, although in the case of males a similar pattern is apparent.

TABLE 4.5 Summary Measurements in the Distribution of the Labour Force by Sector and Sex, 1974 (Percentages)

Statistical Measurements	Male			Female		
	Agr.	Ind.	Ser.	Agr.	Ind.	Ser.
σ	10.51	3.28	7.86	16.91	7.11	13.78
μ	80.91	4.68	14.36	68.59	6.00	25.39
V	12.98	70.08	54.73	24.65	118.50	54.27

Source: Calculated from Table 4.3.

In the distribution of agricultural labour force by districts, females were found to be more dispersed than males. In the service sector, both sexes showed a similar extent of variation. Thus, it is suggested that greater regional disparities had existed for the industrial sector among both sexes. This reflects the fact that a few growth regions had greater economic opportunities through a concentration of industrial employment, while other regions had lagged behind.

Rural-Urban Differentials in Sectoral Composition of the Labour Force

An analysis of the sectoral structure of the work-force is relevant for the insight it produces on the organization of the economy and the level of technology attained by the broad rural-urban spatial categories. Variables such as the nature of production and services must be understood to provide policy guidelines for improving the quality and productivity of manpower and for reducing unemployment and under-employment.

Table 4.6 shows the rural and urban distributions of the employed work-force in various economic sectors by district. It is seen that about one-seventh of the total employed work-force was engaged in the urban agricultural sector. In an underdeveloped country like Bangladesh, the urban economic activities are not specialized. Thus, some of the urban occupations are characterized by the primary production process, such as specialized cultivation of gardening, animal husbandry, and bee-keeping. Also, because of low income levels, larger portions of the service sector have engaged in some other economic activities, primarily agricultural in nature. Moreover, in Bangladesh, the urban

TABLE 4.6 Distribution of the Labour Force by Economic Sector and Rural and Urban Residence, 1974 (Percentages)

District	Rural			Urban		
	Agriculture	Industry	Service	Agriculture	Industry	Service
Chittagong	72.92	3.67	23.36	14.19	16.42	69.39
Chittagong-Hill Tracts	92.02	1.02	6.96	28.78	23.58	47.64
Comilla	85.90	4.17	9.93	20.36	9.37	70.27
Noakhali	82.07	3.76	14.17	10.25	12.83	76.92
Sylhet	87.92	1.16	10.92	21.42	8.38	70.20
Dacca	74.21	9.33	16.46	8.10	21.27	70.63
Faridpur	88.83	2.43	8.74	25.59	13.87	60.54
Mymensingh	92.22	1.06	6.72	25.80	8.98	65.22
Tangail	87.71	5.78	6.51	33.34	14.90	51.76
Barisal	80.76	3.88	15.36	13.01	7.74	79.25
Jessore	87.78	3.05	9.17	29.40	6.10	64.50
Khulna	80.88	6.43	12.69	9.37	23.95	66.68
Kushtia	83.30	5.23	11.47	24.05	10.77	65.18
Patuakhali	88.76	1.97	9.27	20.89	3.72	75.39
Bogra	91.81	1.87	6.31	10.80	8.28	80.92
Dinajpur	91.84	3.22	4.94	20.84	8.33	70.83
Pabna	79.29	9.55	11.16	16.44	22.79	60.77
Rajshahi	90.22	2.50	7.28	21.95	10.89	67.16
Rangpur	92.59	1.67	5.74	26.64	6.36	67.00

Source: Calculated from: Appendix VII.

areas cover a significant part of rural habitation, and this contributes substantially to enhance the agricultural proportion among the total urban work-force. In rural areas, more than 85 percent of the total labour force is dependent upon the agricultural sector.

It is significant that in the urban areas of the country, industrial activities accounted for only 17.0 percent of the total urban employed population, and this level of employment is almost similar to the size of the urban agricultural labour force. This suggests that the urban areas also possessed to a large extent the rural characteristics of primary production; this may be attributed to accelerated rural-urban migration. Lack of research and information on this aspect stands in the way of any conclusion, and may be taken to be of interest for further research.

In contrast to the relatively low industrial employment, the service sector accounted for as high as 68.7 percent of the total urban employed work-force. Moreover, even in the rural areas, this sector accounted for as high as one-tenth of the working population, most of which was engaged in local wholesale and retail trading (haat-bazaar), and other social and public services like collection of revenue, postal, police, and health services, as well as agricultural extension services. In contrast, the service sector in urban areas performs both governmental and private functions.

The regional differences for urban and rural areas give a distinctive picture in terms of the diversification of the economy. Table 4.7 summarizes the measurements of regional distribution patterns of different economic sectors by rural-urban residence. The values of coefficient of variation suggest that the highest disparity was recorded

for industrial sectors in both rural and urban areas. Agricultural and service sectors showed a low degree of dispersion in rural and urban areas respectively. This suggests that regional distribution of economic activities was followed by the division of labour.

TABLE 4.7 Summary Measurements in the Distribution of the Labour Force by Sector and Rural-Urban Residence (Percentages)

Statistical Measurements	Rural			Urban		
	Agr.	Ind.	Ser.	Agr.	Ind.	Ser.
σ	6.06	2.53	4.56	7.47	6.36	8.38
μ	85.84	3.78	10.38	20.06	12.53	67.38
V	7.06	66.93	43.93	37.24	50.76	12.44

Source: Calculated from Table 4.6.

Occupational Composition of the Labour Force by District

In a predominantly agrarian society where both agricultural and non-agricultural sectors are characterized by simple methods of production, one may expect a closer relationship between the sectors and occupational patterns than is found in a more advanced country. Phelps-Brown (1962:86-87) pointed out that the deployment of the labour force by occupation is interlocked with the deployment of industry and:

> "indeed in the simpler form of division of labour, when each man makes only one product but himself performs all the processes that go into making it, occupation and industry coincide. .... As soon, however, as men specialize in processes, a difference appears" (Phelps-Brown, 1962:86).

Given the size of the agricultural labour force in Bangladesh

and its proportion in the total economy, a high degree of homogeneity exists between occupational and sectoral distribution of the labour force. The closeness between labour force sectors and occupational groups is partly borne out in Table 4.8, which provides the distribution of labour among the regions of the country. Comparing the occupational distribution in Table 4.8 with the sectoral distribution in Tables 4.3 and 4.6, it is found that the agricultural sector consists almost entirely of "farmers, fishermen, hunters, loggers, and related workers". Even in the more developed economies, the organization of agriculture is not yet complex enough to involve substantial numbers of skilled manpower categories other than those classified as "farmers".

Looking at other non-agricultural occupations within the labour force, it is found that workers in transport, craftsmen, and general labourers were the largest occupation groups in all districts. Their proportion is significantly higher in the more industrialized districts. The next largest group was that of "sales workers" followed by "service, sports and recreation workers" and in some cases "professional and technical workers". Again, the proportion of the labour force employed in these occupations was highest among the relatively industrialized districts.

Considering the share of the total labour force employed in white-collar) professional, technical, administrators, clerical and sales workers), blue-collar (transport and communication workers, craftsmen, production-process workers) and service workers, it must be concluded that the country has a long way to go in terms of socio-economic development. The proportions of white-collar workers were very low at only 7.7 percent of total labour force, whereas in a

TABLE 4.8 Distribution of Major Occupational Groups of the Labour Force (Employed), 1974 (Percentages)

District	Professional and Technical	Administrative and Management	Clerical	Sales	Service	Agriculture	Production and Transport
Chittagong	2.49	0.29	2.05	9.00	3.82	58.39	23.96
Chittagong-Hill Tracts	1.21	0.10	0.85	2.56	1.69	86.00	7.59
Comilla	1.95	0.12	0.83	3.45	1.13	83.11	9.41
Noakhali	2.09	0.11	1.07	4.76	1.56	80.35	10.06
Sylhet	1.76	0.08	0.62	3.77	1.19	86.63	5.95
Dacca	2.58	0.61	2.57	9.49	4.52	51.93	28.30
Faridpur	1.42	0.07	0.59	3.81	1.01	86.92	6.18
Mymensingh	1.46	0.08	0.69	3.30	1.56	88.82	4.09
Tangail	1.62	0.03	0.66	2.42	1.23	84.89	9.15
Barisal	2.25	0.07	0.82	5.60	1.28	78.42	11.56
Jessore	1.98	0.04	0.71	4.41	1.14	84.58	7.11
Khulna	2.15	0.17	1.40	7.01	2.54	69.28	17.45
Kushtia	2.00	0.08	1.37	4.70	1.87	78.75	11.23
Patuakhali	1.69	0.05	0.61	2.89	0.86	86.06	6.94
Bogra	1.82	0.07	0.62	2.28	1.73	89.00	4.48
Dinajpur	1.47	0.06	0.61	1.98	1.35	89.10	5.43
Pabna	1.69	0.09	0.66	4.90	1.41	74.77	16.48
Rajshahi	1.67	0.07	0.66	2.94	1.43	86.90	6.33
Rangpur	1.37	0.06	0.58	1.84	1.61	89.99	4.55
Bangladesh	1.87	0.15	1.04	4.67	1.93	79.11	11.23

Source: Calculated from Appendix VIII.

developed country such as Canada the corresponding proportion in 1980 was 49.9 percent (International Labour Office, 1980:84). In this context, it should be emphasized that an index of proportion of all white-collar jobs is not necessarily an adequate index of technological or economic development (Jaffe and Stewart, 1961:146). This is because it does not take into account the quality of white-collar work. It seems safe to assert that the quality of white-collar workers as a group in Bangladesh is not at par with that of developed countries. In Bangladesh, more than half of the white-collar workers were sales workers, most of whom were supposedly involved in petty, marginal-type trading, whereas most of the sales activity in developed countries is an organized form and consists of highly specialized sales occupations. A similar condition may be assumed for blue-collar workers, because the transport and communication system is limited in the hands of public sector, and the craftsmanship and production-process involving occupations is mostly organized by small-scale entrepreneurs. Further research, applying a reclassification on the basis of traditional and modern occupational sectors within each occupation group, would help in an understanding of the differences of occupation in contrasting socio-economic environments.

The characteristics that are found in the analysis of the distribution of the labour force by occupation in the country as a whole and among the districts can be summarized as follows: (a) Distribution of the labour force by occupation is virtually the same as the sectoral distribution of economic activities of the population in most of the regions. The little distinction between these two classifications of the labour force — occupational and sectoral structure — signifies a

low degree of development and industrialization throughout the country. (b) The blue-collar workers that form part of the non-agricultural labour force, and that play a relatively more direct role in material production, are found to be concentrated in only a few districts, such as Dacca, Chittagong, Khulna and Pabna (Table 4.8). (c) A similar pattern also emerges in the case of white-collar workers. This indicates that the growth regions gained more opportunities from all sub-sectors of the labour force. (d) With respect to spatial distribution patterns, occupational categories show significant disparity in the country. This picture is identical to that of the economic categories of the labour force. However, this signifies that the division of labour force categories in Bangladesh remain in a relatively simple form in the absence of more specialized occupations.

Summary

In this chapter, two major aspects of labour force structure in terms of economic sectors in Bangladesh have been analysed — firstly, analysis of labour force trends by sectors; and secondly, the examination of patterns of spatial concentration and dispersion of the labour force by sectors.

It has been observed that the trend of labour force sectors in underdeveloped countries, and particularly in Bangladesh, does not follow the sequential transformation of economic sectors, from agriculture to industry, and subsequently to the service sector. Nevertheless, the analysis of labour force sectors for the period of 1900-1960 indicates that agriculture has remained as the dominant economic

activity in Bangladesh since the beginning of the century. The service sector grew in subsequent decades, although its proportion was less than one-sixth of the total labour force. The proportion of the industrial sector to the total labour force in the country remained nominal, or even declined slowly. Long colonial domination over the territory, predominance of an orthodox set of values and expectations, and the traditional nature of socio-economic institutions together have hindered industrial development.

The examination of spatial patterns of economic sectors by districts indicates that industrial employment is relatively concentrated in the country, compared to other economic sectors. The pattern of agricultural employment shows a relatively uniform distribution among the districts. A simpler technological know-how is needed in this sector as well as capital investment. In contrast, the industrial sector has a more dynamic role in economic development, and requires more specialized training and skill as well as large-scale capital investment, which is lacking in Bangladesh. The concentration of the industrial sector in some privileged regions suggests that favourable economic opportunities are being distributed by a polarized development process. This proposition is also supported by the analysis of the patterns of occupational distribution in the country; relatively productive, albeit indirect, blue-collar occupations were found to be concentrated in the industrialized districts.

The above synchronic analysis of the patterns of economic sectors provides a basis for explaining the dynamics of the growth of economic sectors to be discussed in the next chapter.

CHAPTER 5

REGIONAL VARIATION AND DYNAMICS OF LABOUR FORCE CHANGE, 1961-1974

The first section of this chapter will focus on inter-regional variations of the labour force among the districts of Bangladesh. It will also examine sex differentials in growth patterns. The second part of this chapter consists of an analysis of the patterns and dynamics of regional variation of different economic sectors of the labour force in the country. The main focus will be to identify the nature and characteristics of change in regional labour force sectors, and the processes by which they are affecting the spatial forms and organizations over time. However, on the basis of most recent available data, the period of 1961-1974 has been analysed in order to determine the regional growth patterns and variations in terms of the labour force changes in Bangladesh.

Patterns in the Variation of the Total Labour Force (TLF), 1961-1974

The percentage change in the Total Labour Force (TLF) in the districts of Bangladesh for the period of 1961-1974 fell within the range of -18.8 (Comilla) and 53.4 (Dacca) (μ = 22.0; V = 63.1%; see Appendix IX). The resulted spatial patterns show "low" growth rate in the eastern peripheral districts, namely, Comilla, Noakhali, Mymensingh, and Chittagong Hill Tracts (Figure 5.1). Among them, three districts are in high density zones of population distribution (Ahmed, 1976:38), which show a decline or negative growth rate of the TLF. In this connection, it should be mentioned that these districts have also experienced a negative net migration of population during this inter-censal

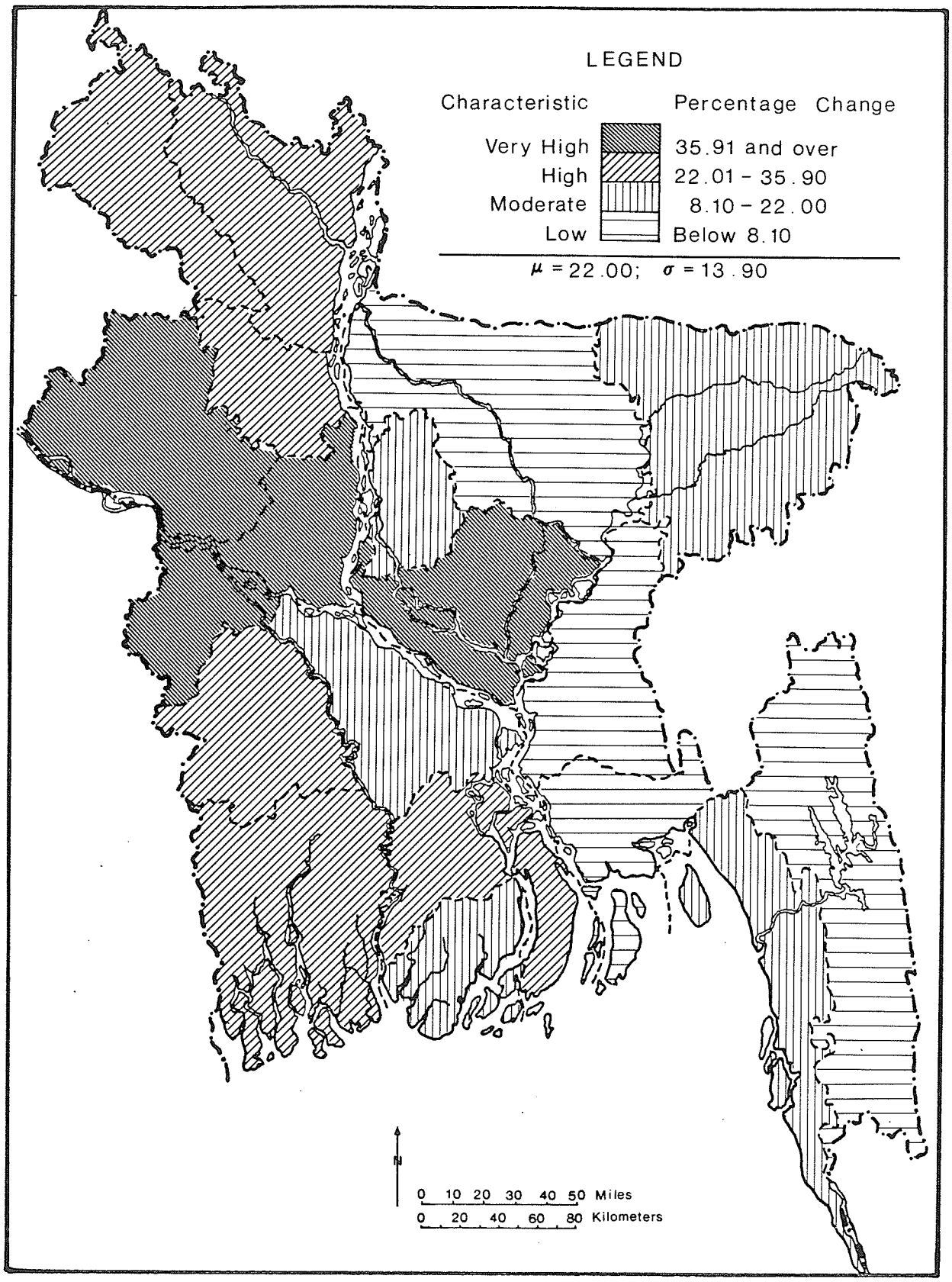

FIGURE 5.1 Patterns in the Variation of the Total Labour Force, 1961-1974

Source: Appendix IX.

period (Appendix X). It may be assumed that the migration patterns have been age selective and the manpower loss of working age cohorts thus considerably affected the change in the proportion of TLF in these districts. Choudhury (1978) supported this proposition while he studied 68 villages of four thanas in the district of Mymensingh. He observed that the migration characteristics were male and young adult age selective. Migrants aged 20-39 years constituted 58 percent of the total migrant population.

All the districts located west of Jamuna and Gorai-Madhumati river registered "high" and "very high" growth rates of labour force proportion. These also included the coastal districts of Patuakhali and the central district of Dacca which contained the capital city. The overall pattern, however, is caused by the fact that a majority of the relatively sparsely populated western districts received the larger portion of in-migrants from the densely populated and supposedly agriculturally saturated districts. Dacca city, since its establishment as the provincial capital of East Pakistan in 1947, had received major privileges in past development plans, particularly for non-agricultural establishments by the public sectors. Also, after the Liberation in 1971, and with the changed status as the national capital, the city attracted an enormous population, especially from the eastern districts.

A survey conducted by the Center for Urban Studies (CUS, 1976) supports such a proposition. It suggests that during the post-Liberation period, there were considerable changes in migration patterns both for economic and socio-political reasons. The rate of migration to urban areas accelerated (CUS, 1976:10). In an interesting survey of bastee (slum) population in Dacca City and its impact, Qadir (1975)

showed that the majority of the sample in-migrants came from southern and eastern districts, such as Faridpur, Barisal, Comilla, rural Dacca and Noakhali. Their respective percentages of the total in-migrants were 27, 24, 20, 12, and 5. Qadir observed that the rate of bastee growth in Dacca city declined for a short period after 1962, but since 1969 it started to increase rapidly. This indicates a further large-scale influx from rural areas of the country. She also showed that more than 25 percent of the sample population changed its economic activity after 1971, of which a large proportion were peasants (32 percent of the total population who have changed their occupation after Liberation), day labourers (20 percent), and industrial factory workers (15 percent) (Qadir, 1975:38). The change in activity patterns of the population in the country may be correlated with a geographical shift of the labour force.

Much of the migration can be attributed to the gradual deterioration of rural socio-economic conditions in recent times. This deterioration of rural areas is primarily related to the process of accelerating income and social polarization (Alamgir, 1978:19-37); Choudhury, 1978). As a matter of fact, accompanied with high population growth and a low level of technology, skill and education, the rural means of production in agriculture concentrates ownership in fewer hands (Integrated Rural Development Program, 1977:63-66). The consequences affect adversely agricultural output and reduces income and employment opportunities. Drastic reductions of basic necessities in household consumption initiate and accelerate the flow of uprooted people from high density to low density zones of population distribution as well as to the urban areas.

Also, whatever surplus emerges from agricultural production is usually reinvested in urban areas, primarily in petty trades, commercial services and other related sectors. This is facilitated by the opportunity for a relatively small amount of capital investment in urban service sectors in the country. Choudhury (1978:9-12) indicated that, for example, in Mymensingh villages, remittances to sons and other kin for educational expenses, result in an out-flow of cash-capital from the villages. Some 12.2 percent of the total households in the sample villages could afford this remittance out-flow in addition to their household consumption. However, in traditional society, this kind of capital transfer is considered a necessary investment for social and financial security for parents in their old ages. Also, the predominance of a general education curriculum in the established formal educational institutions that drive the young graduates to seek jobs in service sectors, especially in administrative, professional, clerical and other related occupations, will eventually lead them to settle in urban areas. The concern for social prestige (maan-sammaan) gets priority in seeking urban jobs rather than the question of income. As a consequence, separation from direct involvement in agricultural production is considered a low to high social mobility. Thus, social forces yield the perception of rural-urban migration as a part of family level aspirations.

Besides this social dynamism, urban domination is an important factor to attract enormous population influx from the rural areas to the urban areas in the country (Alamgir, 1978:116-118; du Guerney, 1978:33-36). In this respect, Alamgir (1978:116) stated that on the one hand, financial resources, wherever they are mobilized, are

ultimately transferred to the urban areas. This inevitably happens because financial institutions are mostly located in urban areas. On the other hand, the allocation of physical resources (moveable type), wherever generated, is controlled from urban areas. He also mentioned that since the seat of administrative and political power is located in urban areas, the state is more sensitive to the reaction of the urban population to various policies. Therefore, political authority is more responsive and biased to the demands for urban population in general.[1] In fact, this authoritative image of the urban areas is largely responsible for drawing potential migrants from rural areas. However, the process is not to be seen in terms of the spatial duality in a rural-urban continuum,[2] but the geographic mobility of population from rural to urban areas is to be considered an effect of class exploitation in a class-based society like Bangladesh.

Variation in the labour force growth, on the one hand, depends on the policies and programmes of local and national resource mobilization that creates newer employment opportunities. On the other hand, it relates to the dynamics of the demographic components. It may be assumed that rural to rural and rural to urban migration of population from the eastern and south-eastern districts to the western and central districts determined the major change in the proportion of the economically active population. In spite of this, the regionalism of activity patterns and their variation have been the result of regional differences in natural increase. The increasing success in eradicating some communicable diseases and epidemics, and controlling the incidence of famine, especially in the western districts, has resulted in improved infant mortality rates over the last decade. This

cohort consequently resulted in the increase of the manpower group in these areas during 1961-1974. It is probable that other factors like industrial location, transport and communication systems, diffusion of agricultural technology, introduction of universal elementary education and other socio-economic variables also contributed to the inter-regional variation of the TLF and its changes over time.

With reference to the preceding discussion, it is interesting to examine the degree of cross-sectional inter-relationships between the percentage change in TLF during 1961-1974 among the districts of the country and other selected demographic and socio-economic variables, namely, lifetime net migration rate 1961-1974; rate of urbanization 1961-1974; rate of change in literacy during 1961-1974; rate of population growth 1961-1974; man-land ratio; per capita rice production; and the location quotient of manufacturing industry. However, the characteristics of the selected variables are static as well as dynamic by nature.

The lifetime net migration rate is measured using the 1974 census enumeration on "place of birth". From a comparison of the 1961 data, dimensions of net migration for each district during 1961-1974 have been computed. The rate of urbanization is measured by computing the percentage change in urban population in each district. The rate of change in the literate population and the rate of population growth are also measured in terms of the percentage change during 1961-1974. The man-land ratio represented for 1974 is measured as the proportion of rural population to total cultivable land area unit (per acre). This is considered to be a refined measure of general population density. Per capita rice production is taken as an index of agricultural

efficiency and measured in pounds. The index of location quotient in manufacturing is considered to represent the degree of industrialization. This is measured as the labour force engaged in this sector in the country in 1974.

The matrix of correlation coefficients is presented in Table 5.1. It should be mentioned that, to make causal inferences, one needs not only to understand the statistical association but also possess sufficient empirical basis and knowledge. Nevertheless, the hypothesis concerning the positive association between the rate of change in TLF during 1961-1974 and the rate of net migration appears to be supported (r_{12} = +0.59).

Also, migration has contributed significantly to total population growth and distribution among the districts during the inter-censal period (Government of Bangladesh, 1977:12). This can be seen in the correlation coefficient between them (r_{25} = +0.47). The only other noteworthy relationship is expressed between the rate of urbanization and the index of industrialization (r_{38} = +0.46). From Appendix X, it is seen that, in Bangladesh, the highest levels of urban growth have taken place in only few districts during 1961-1974: namely in Tangail (383 percent); Dacca (243 percent); Khulna (254 percent); Patuakhali (248 percent); and Chittagong (173 percent). Among these districts, an above national average condition in the manufacturing sector was found in Tangail, Dacca and Khulna districts. This pattern suggests that wherever industrialization has taken place within the country, urbanization has also occurred. This is more applicable to the primate cities and larger industrial concentrations (Alamgir, 1978:151-2).

The overall patterns of association between these socio-economic

TABLE 5.1 Correlation Matrix of Some Selected Socio-economic Variables

	X_1	X_2	X_3	X_4	X_5	X_6	X_7	X_8
X_1	1.0000							
X_2	0.5903	1.0000						
X_3	-0.0626	-0.0078	1.0000					
X_4	-0.1662	0.0359	0.1718	1.0000				
X_5	-0.1980	0.4737	0.1633	-0.1684	1.0000			
X_6	-0.0432	-0.0558	0.0989	0.2882	-0.2792	1.0000		
X_7	-0.0762	-0.3321	-0.1815	0.1414	-0.4569	-0.3317	1.0000	
X_8	-0.1364	0.0134	0.4565	-0.1856	0.3217	0.0110	-0.5586	1.0000

X_1 = Rate of total labour force change (%), 1961-1974
X_2 = Rate of life-time net migration, 1961-1974
X_3 = Rate of urbanization (%), 1961-1974
X_4 = Rate of growth in literacy (%), 1961-1974
X_5 = Rate of population growth (%), 1961-1974
X_6 = Man-land ratio, 1974
X_7 = Per capita rice production (pounds), 1974
X_8 = Location quotient in manufacturing industry, 1974

Source: Calculated from Appendix X.

and demographic variables selected above are clearly indicative of some possible general features relating to TLF growth. A micro-level study on the determinants of socio-economic processes would be helpful to reach a more comprehensive and meaningful conclusion.

Sex Differential Patterns of Variation in the Labour Force

In Bangladesh, the Male Labour Force (MLF) showed a much higher percentage change in comparison to the Female Labour Force (FLF): during 1961-1974, about 32.8 percent for the MLF and 9.9 percent for the FLF change (see Appendix IX). This simply reflects the male dominance in economic and social roles in traditional society. Of interest in this section, however, is whether any significant regional differences exist in labour force growth patterns between males and females.

Figure 5.2 shows the pattern of regional variation by percentage change of MLF. The "low" rates have been registered by the southern districts of "active delta" zone, namely, Patuakhali, Barisal, and Faridpur. This category included one northern district - Mymensingh. Notably, all of these districts have lost some population during 1961-1974. However, the "low" MLF in these districts is primarily caused by out-migration, which is characterized by male selective out-flow of adult age population. This has adversely affected the MLF in these districts of migration origin.

A "moderate" percentage change of the MLF was recorded by the densely populated Comilla and Noakhali districts. Chittagong Hill Tracts, with the dominance of tribal people, also registered in this

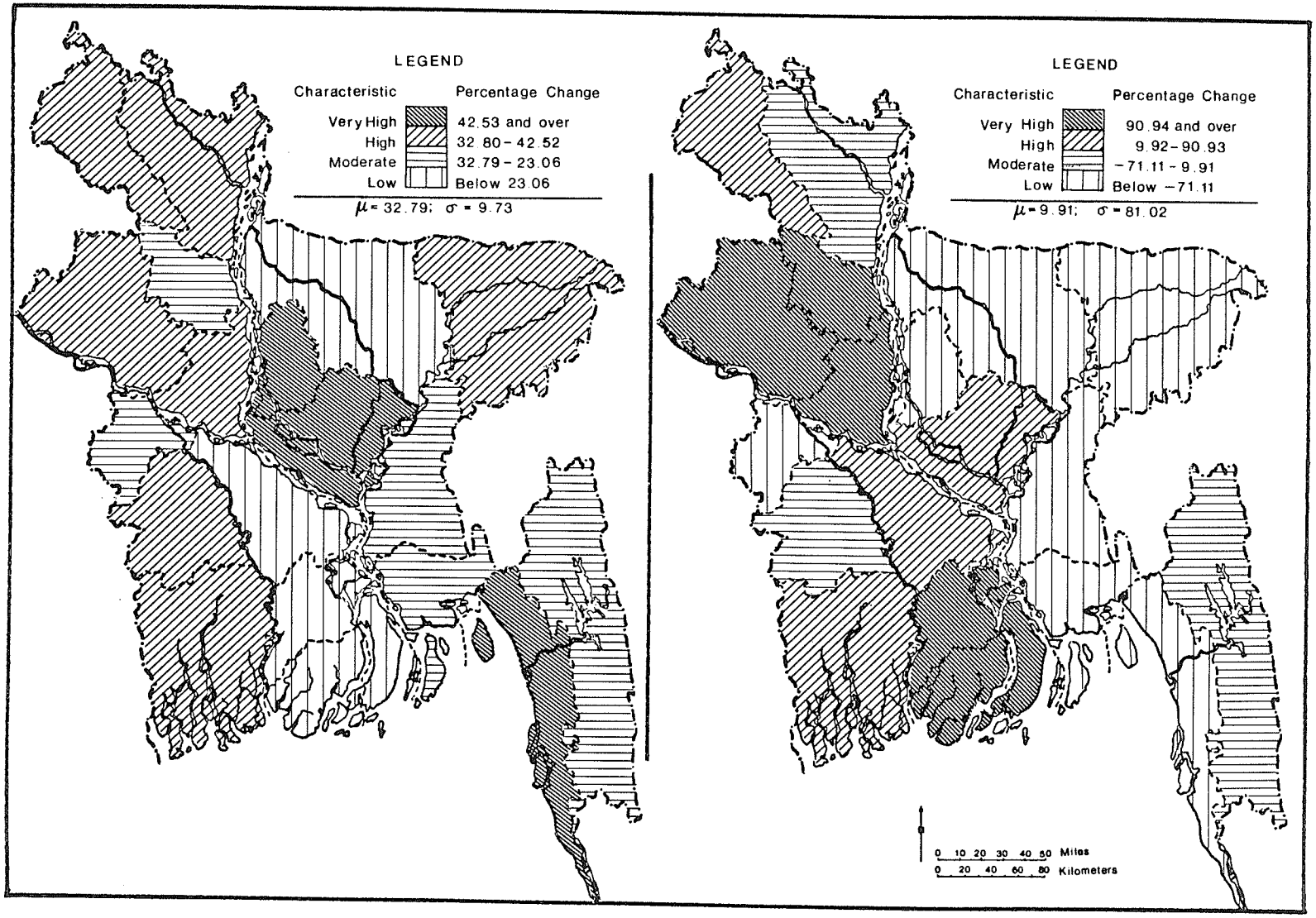

FIGURE 5.2 Patterns in the Variation of Labour Force by Sex, 1961-1974

Source: Appendix IX.

category. Among the remaining districts, the western districts of Bogra and Kushtia were included in "moderate" category.

The other western districts, along with one north-eastern district, show a higher percentage increase than the national average condition in MLF. The most privileged districts, namely, Dacca and Chittagong, which have the most urbanized and industrialized areas, recorded a "very high" percentage increase in the case of MLF.

Out of the 19 districts, ten registered a negative FLF growth rate, which means that the size of the FLF decreased in these districts during the study period. It should be mentioned that the changes in the census definitions resulted in such a pattern in the country. This explanation is quite reasonable in view of the absence of the socio-political changes which could enforce involuntary retirement of females from the labour force category. As stated above, in the 1961 census, it was only necessary to be helping a member of the family in order to be included in the labour force enumeration, whereas in the 1974 census, a female must have been self-supporting before she was included in the labour force (Government of Bangladesh, 1977:3). Thus, the unpaid female family workers who were included in the 1961 count were largely excluded in the 1974 count. They were classified as "house-wives" in the 1974 census. However, this contributed considerably to the inverse growth of the FLF in the 10 districts of the country.

In contrast to the patterns of MLF, the nine western districts, excluding Rangpur and Jessore, indicated an above the national average percentage increase in FLF. But the eastern districts, including Dacca, recorded a decline in the size of the FLF. The percentage change in FLF suggests that population movement, particularly age-sex selective

rural to rural migration from the eastern districts to the western part of the country, may have resulted in a more dependent population in eastern regions. In other words, a higher child dependency burden usually suggests there was a higher enumeration of females in the "housewives" category. Finally, the distinct sex-differential patterns of the regional labour force change could be understood provided sufficient data on sex-categorized breakdowns of demographic characteristics were available.

Patterns of Variation in the Labour Force by Economic Sectors 1961-1974

The purpose of this section is to analyse the patterns of labour force (employed) growth and change integrating both the regional and sectoral dimensions. In the preceding section, the labour force is analysed in terms of those who are employed as well as the unemployed population. With respect to a direct contribution to the production processes, analysis of the employed work-force can provide a relatively refined magnitude of regional and sectoral growth patterns. In this section, sectoral growth patterns among the regions in Bangladesh and their variations over time are therefore examined only considering the employed proportion of the labour force.

Table 5.1 shows the patterns on the percentage variations of the labour force by each economic sector among the districts of Bangladesh during the period of 1961-1974. The percentage changes in the agricultural employed labour force fell within the range of -33.1 (Comilla) to 37.5 (Kushtia); ($\mu = 12.0$; $V = 156.6\%$; see Appendix XI). Out of the 19 districts, five indicated a decline in agricultural employment

condition during 1961-1974 ranging from -0.4 percent to -33.1 percent (see Appendix XI). These districts are Comilla, Noakhali, Chittagong, and Chittagong Hill Tracts. In total, eight districts registered in the "very low" and "low" categories (Table 5.2). Most of these districts are located in the high density zones of population distribution (more than 1500 population per square mile), and experienced considerable net out-migration during inter-censal period of 1961-1974. Only Chittagong Hill Tracts has a characteristic of sparsely distributed settlements. With about 86 percent of forest area of the total land area, opportunity for agricultural cultivation is quite limited in this district. However, only two relatively industrialized districts, namely, Chittagong and Khulna recorded a below average percentage change in agricultural employment.

TABLE 5.2 Variation in the Agricultural Labour Force (Employed), 1961-1974.

Percentage Changes	Characteristics	Districts
Below -6.79	Very Low	Comilla, Noakhali and Mymensingh
-6.79...12.00	Low	Chittagong, Chittagong Hill Tracts, Barisal, Sylhet, and Khulna
12.01...30.79	Moderate	Tangail, Faridpur, Rangpur, Dacca, Patuakhali, Pabna, Jessore, Dinajpur, and Bogra
30.80 and over	High	Rajshahi and Kushtia

Source: Calculated from: Appendix XI.

In contrast, the central and western districts of the country

showed an above average percentage increase in this sector. Notably, the district of Rajshahi with the divisional headquarter, and Kushtia district which is relative industrialized, recorded "high" percentage increase in agricultural employment (more than 30.8 percent). Since the 1960s, in both of these districts, the high yielding rice varieties have been replacing traditional varieties with increased use of irrigation and chemical fertilizers (Arthur and McNicoll, 1978:32). This modernization in agriculture may have resulted in relatively higher employment opportunities through increasing income and wages for agricultural labour and subsequent immigration from other areas for such job opportunities. For example, the 1974 census recorded an in migration of 14,724 population in Kushtia district during 1961-1974 (Government of Bangladesh, 1977:25).

The overall pattern in the regional variations in agricultural employment during 1961-1974 indicated that a negative magnitude of change took place in the densely populated eastern districts, while the western districts with a relatively low degree of population pressure have registered a higher positive increase in this sector. These two contrary magnitudes of change resulted in a nominal average percentage change in the agricultural work-force for the nation as a whole (only 12.0 percent).

The dynamics of regional variations in agricultural employment were significantly characterized by the inter-district population movement. The correlation coefficient of +0.56 between the percentage changes in agricultural work-force and the net migration rates substantially supports this proposition. It may be assumed that increasing population pressure on land and lack of employment in the agricultural

sector in the eastern districts have resulted in mass up-rooting from these areas. The direction of the flow of migration of this population was towards the western part of the country, where a relatively favourable man-land ratio was prevalent.

The distributional patterns of the changes in the employed labour force in the industrial sector during 1961-1974 ranged from -52.8 (Mymensingh) to 194.8 (Tangail); ($\mu = 7.7$; $V = 757.1\%$; see Appendix XI). From Table 5.3, it is seen that, in total, 10 districts registered a decline in their industrial work-force. These districts are mostly the peripheral districts located in south-eastern, north-eastern and western part of the country. Among these districts, Mymensingh experienced maximum decline in industrial employment (-52.8 percent) and registered "low" in the distribution patterns of percentage changes in this sector. This district is predominantly agricultural, and with increasing population pressure, large scale population out-migration took place in the absence of employment opportunities in the non-agricultural sector.

Only eight districts, most of which are in the central part of the country, registered a "moderate" percentage increase in industrial employment. Four districts in this category, namely, Dacca, Khulna, Comilla and Pabna are the most industrialized regions in the country. Among the industrially advantaged districts, only Chittagong district recorded in the "low" category. This may be because of the fact that the port and industrial belt in Khulna have been developed with priority for jute export during the 1960s. On the other hand, after the partition of India, Chittagong port lost its hinterland of Assam tea plantation and export. However, only Tangail district indicated a

considerable positive increase in this sector (194.8 percent). This may be because of the fact that, on the one hand, major small cottage and handloom industries have been converted into power driven factories. On the other hand, the new administrative set-up and raised status from a subdivisional to a district, may have attracted considerable private capital for investment in the industrial sector during the late 1960s and the earlier part of the 1970s.

TABLE 5.3 Variation in the Industrial Labour Force (Employed), 1961-1974

Percentage Changes	Characteristics	Districts
Below -50.24	Very Low	Mymensingh
-50.24...7.67	Low	Sylhet, Chittagong, Chittagong Hill Tracts, Bogra, Jessore, Kushtia, Patuakhali, Faridpur, and Rajshahi
7.68...65.59	Moderate	Noakhali, Rangpur, Dacca, Barisal, Pabna, Khulna, Dinajpur, and Comilla
65.60 and over	High	Tangail

Source: Calculated from: Appendix XI.

In sum, it is seen that the industrial sector of the economy, which characteristically requires a more specialized function of production, was spatially becoming polarized over time. Theoretically, a decline in the proportion of the labour force in agriculture relative to other sectors is generally considered a positive step towards economic development. But a concomitant increase in the industrial sector is prerequisite for such development, at least in the initial

stages of economic development. In the Bangladesh context, it is alarming that the expansion in the industrial sector in few growing regions had taken place, but at the expense of other peripheral regions. Notably, in the country as a whole, the percentage change in the industrial sector was nominal during the 1961-1974 period — only 7.7 percent. The spatial variation in industrial employment growth in the country clearly suggests that the process was followed by increasing polarized development. This has resulted in further widening of the regional gaps.

As discussed earlier, one undeniable fact that characterizes the majority of underdeveloped countries for the last 30 years is that the urban areas of these countries have been growing massively. The urban growth had not been associated with a rate of industrial growth fast enough to provide newer employment opportunities for the rapidly increasing population. Although the proportional size of urban population in many South-East Asian countries still remains a low proportion of the total population, the alarmingly rapid growth must be attributed to the dynamics of rural socio-economic conditions. In an environment of diffusion of elementary education and mass communication, gradual deterioration of the rural economy and lack of employment, particularly in the non-agricultural sector, resulted in a large influx of population in urban areas. The majority are absorbed in the labour-intensive service sector since this sector provides a relatively flexible scope of employment in the private sector and additional and illegal services in public sectors.

The emergence of the service sector to a position of importance — even dominance — in the highly developed industrialized nations has

been accepted as an integral and necessary evolution of these economies. Thus, a high proportion of service employment in developed countries is positively correlated with a considerable degree of economic development and level of urbanization. In respect to underdeveloped countries, a similar high level of service employment should not be regarded in the same favourable light. This is because marginal productivity of additional labour deployment in the labour-intensive service sector is very low or even absent in underdeveloped economies.

In the light of the above discussion, the patterns of regional variation in the service sector employment among the districts of Bangladesh are analysed. It is seen that, in this sector, all of the districts in the country showed a sizeable increase during the period of 1961-1974, ranging from 67.6 percent (Faridpur) to 170.3 percent (Dacca); (μ = 113.35; V = 31.5%; see Appendix XI). At the national level, the size of the labour force employed in the service sector more than doubled during the 1961-1974 inter-censal period.

From Table 5.4, it is observed that the peripheral districts such as Dinajpur, Patuakhali, and Chittagong Hill Tracts showed a "low" percentage increase in service sector employment compared to other parts of the country. Also, a percentage increase below the national average was registered in the predominantly agricultural northern and western districts (Mymensingh, Rangpur, Bogra, and Jessore), and in the relatively industrialized districts (Chittagong, Tangail, and Kushtia). Among the remaining districts with divisional headquarters, Rajshahi and Khulna recorded a "high" service sector employment growth. The relatively industrialized district, Pabna, registered in the same category. The densely populated central districts, namely, Dacca,

Comilla, Noakhali and Barisal, recorded a "very high" percentage increase in the employed service sector of the labour force. Although the pattern of service sector employment did not follow the pattern of increasing regional variation among the districts, its growth tended to be locationally concentrated in the advantaged central regions as well as in the relatively industrialized districts.

TABLE 5.4 Variation in the Service Labour Force (Employed), 1961-1974

Percentage Changes	Characteristics	Districts
Below 77.57	Low	Faridpur, Dinajpur, Patuakhali, and Chittagong Hill Tracts
77.57-113.34	Moderate	Mymensingh, Jessore, Bogra, Rangpur, Chittagong, Kushtia, and Tangail
113.35-149.12	High	Rajshahi, Sylhet, Khulna, and Pabna
149.73 and over	Very High	Comilla, Barisal, Noakhali and Dacca

Source: Calculated from: Appendix XI

Figure 5.3 depicts the comparative pictures of the patterns in the labour force changes during 1961-1974 among the economic sectors. Three major characteristics are distinguishable from Figure 5.3: (i) Changes in the agricultural employment sector were nominal at the national level, whereas regionally the eastern districts experienced a decline and the western districts expanded job opportunities in this sector. (ii) In the case of the industrial sector, the national growth rate was least among the three broad economic sectors. Most of the

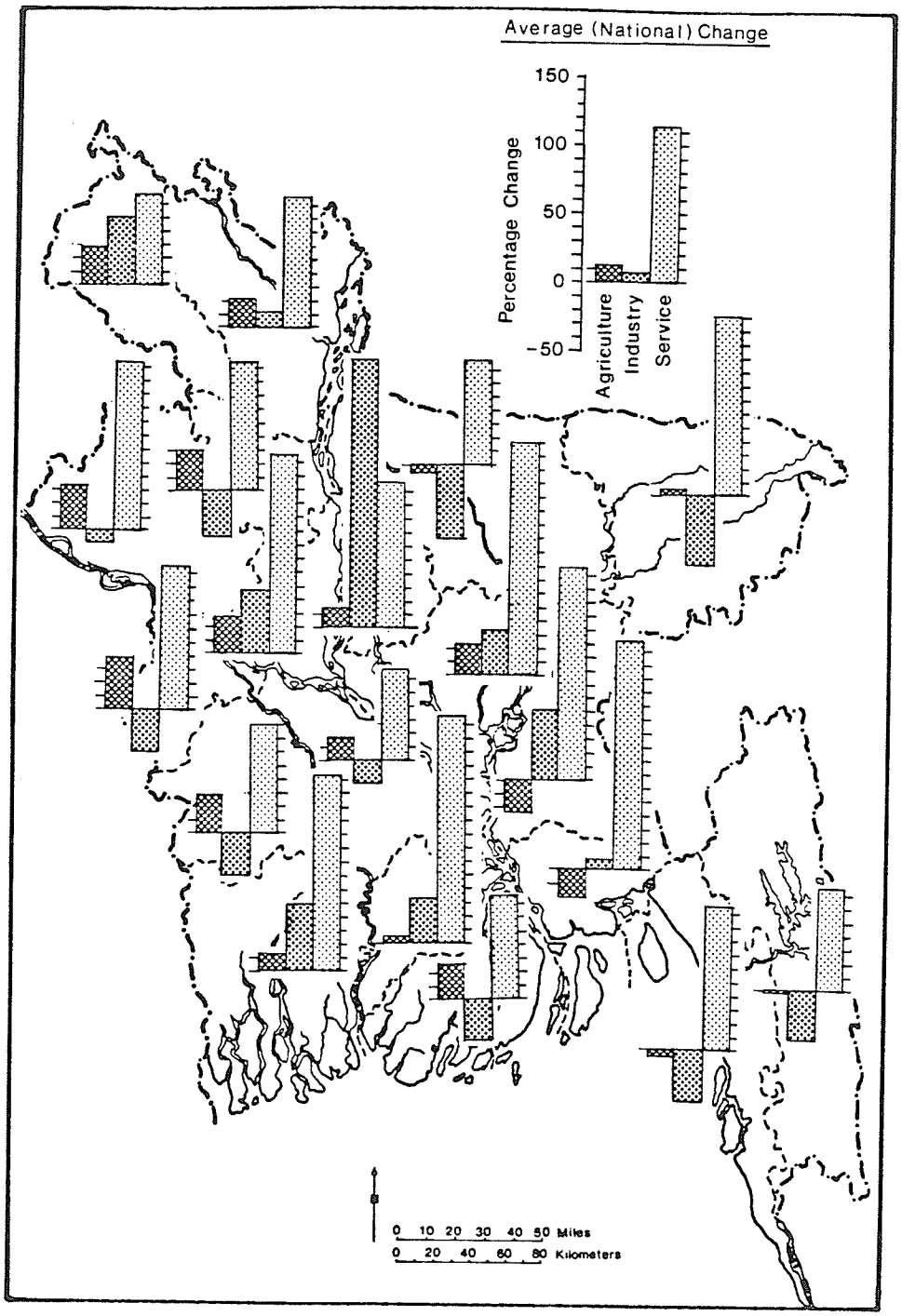

FIGURE 5.3 Patterns in the Variation of Labour Force by Economic Sector, 1961-1974

Source: Appendix XI.

peripheral districts experienced a decline in industrial employment during 1961-1974, and whatever expansion took place was concentrated in the central districts. In all, growth in the productive sectors was minimal at the national level during the inter-censal period of 1961-1974. From a regional point of view, expansion in the growing regions took place at the expense of other relatively depressed regions. (iii) The service sector, commonly a non-basic producer, showed an overwhelmingly rapid growth compared to the other economic sectors, both at the national and regional level.

Finally, the trend in the growth of economic sectors in Bangladesh clearly shows a lop-sided increase in the non-productive sectors. This would have negative implications for both economic organization as well as spatial organization in the country. For example, the peripheral districts are increasingly becoming under-developed relative to the central areas, and likely to experience incremental adverse effects over the future decades if the current processes continue.

Summary

The spatial analysis of the patterns of labour force variation during 1961-1974 clearly indicate an unequal development of employment among the districts of Bangladesh. The gaps, particularly in the non-agricultural sectors, were being widening in this inter-censal period. The national average conditions of growth in the agricultural and industrial sector were found to be stagnant in nature. The regional pattern in the agricultural sector was distinctive while the high

density zones of population distribution showed decline or relatively low growth during 1961-1974. Although this pattern was indicative of a positive transformation of the labour force, the changes in the non-agricultural sectors took place toward the non-basic productive sector of services. Moreover, the regional growth patterns among the non-agricultural sectors tended to be "polarized" with the passage of time. In other words, industrial and service sector component growth took place in few selective districts of which most are already relatively industrialized and well-established administrative poles.

In the following chapter, prospects for labour force growth and the possible extent of future distributional patterns will be examined through their projections. This will help to foresee the magnitude of the future manpower and development problems and prospects as well as their policy implications.

CHAPTER 6

PROJECTIONS OF BANGLADESH'S LABOUR FORCE

In this thesis, the projections of economically active population serve two prime purposes. First, from a demographic point of view, they estimate the future size of the labour force supply which will result from population growth. Secondly, from an economic point of view, they examine the extent and magnitude of labour force absorption in the different economic sectors. Theoretically, population growth components furnish the supply of labour as a factor of production, but only while there is a demand for it created by the composition of other factors of production. For effective manpower planning, both these dimensions need to be closely examined. This chapter is intended to focus on the projected labour force size over a period of 27 years, from 1974 to 2001 A.D. and its proportional distribution among the sectors of Bangladesh's economy. The base data that are used to estimate the projected labour force have been obtained from the 1961 and 1974 census data. Major emphasis is given to regional characteristics of the future labour force, and future implications of current trends in demographic components, particularly the internal migration.

Widespread concern about economic planning and development in underdeveloped countries has led to a considerable interest and effort in making projections of the labour force in recent decades (International Labour Office, 1977). As the need for long-run planning became recognized in Bangladesh (Government of Bangladesh, 1973), the problem of an accelerating population in relation to the socio-economic conditions have become policy issues of great importance.

Although planning goals have, in the past, been set essentially in terms of growth of national per capita income, planners cannot ignore the problems of regional economies with respect to demographic growth and local unemployment. Large numbers of the existing labour force are either unemployed or underemployed, and to these are added annually the new entrants to the labour force. At the same time, a shift in the occupational pattern of the labour force away from the agricultural sector to the industrial sector and subsequently to the service sector is a prerequisite for general growth of per capita income and wages. A question related to this is whether spatial dislocation, or the geographical shift of the labour force, is necessary for such growth in the economy. This question remains subject to debate. Today, the considerable volume of unemployed labour, which creates a precarious socio-economic and environmental condition in cities of Third World countries, is of vital concern in manpower and development planning. It is for this reason that properly conceived spatial employment objectives should be incorporated in the planning process, especially in a long-term development plan. The purpose of this chapter is to examine the magnitude of projected labour force growth in relation to regional economic development in general.

Regional Approach to Labour Force Participation

Since the 1950s, various empirical studies have recognized that variations in inter-regional rates of population growth and economic development within a country influence the flow of manpower and other capital resources (Friedlander, 1965; Friedmann, 1968; Miracle and

Berry, 1970; Muñoz, et al. 1979). Such flows are generally reflected in the regional structure of the labour force. A regional dimension is thus a necessary component in manpower and development planning. Some case studies of developed countries, as well as a few of underdeveloped countries, have explicitly indicated the role and importance of spatial projections of the labour force for national planning purposes (U.S. Department of Labor, 1966; Pressat, 1961).[1] But a diversified approach to methodologies on projections preparation is notable. For example, the projections of the regional labour force of the Philippines prepared jointly by the United Nations and the Government of the Philippines (1960) employed the correlation of labour force and industrialization, i.e., the percentage of the labour force in the agricultural sector. Ducoff (1960) used the concept of regional labour force estimation to generate national aggregate labour force size, and from this, to predict future changes in the national labour force sectors of some Latin American countries. The Economic Commission for Latin America employed the method of "arithmetic extrapolations" (See Appendix XII) of a constant growth rate to project the agricultural and industrial labour force for Colombia in the period of 1950-1981 (United Nations, 1962). The remaining national population growth was assumed to be absorbed by the service sector. An assumption of zero net internal migration was used by Pressat (1961), to prepare the hypothetical projections of agricultural and non-agricultural population for each province in France. All these examples show that the regional approach to labour force projections by economic sectors are increasingly being used, especially in developed countries.

Methodology of the Projection

In Bangladesh, no reliable estimates of current subnational or district level survival ratios are available, and no widely acceptable life table has yet been constructed to depict the regional mortality rates and differentials. The techniques of "geometrical extrapolation" (See Appendix XII) have been considered more reliable to estimate the labour force (USAID, 1975). The techniques are as follows:

primarily finding the annual rate of labour force growth (R)

$$R = \frac{\log \frac{L_2}{L_1}}{t_1 \log^e}$$

where, R = rate of change per annum

L_1 = initial labour force size

L_2 = terminal labour force size

t_1 = time over which the change took place

and then applying the growth rate (R) in the continuous compounding formula:

$$L_3 = L_2 \; e \; t_2 R$$

where, L_3 = projected labour force size

t_2 = time over which the change will take place.

Employing the above method of extrapolation, labour force projections are made for each district separately and by each economic sector on the following assumptions:

1. Labour force increase between the two given dates is at

a constant rate, having added continuously with additional compounded interests; and

2. No major disturbances in the natural and economic determinants of labour force growth will take place between the base and terminal period. In other words, the assumption is that there will be a constant natural and net increase rate of population and a constant ratio of proportion of labour force for each spatial unit, without any significant measures to affect the regional magnitude of labour force.

As a matter of fact, the projections represent a straight line or smooth growth curve to the base year estimate. These are made at 10-year time intervals, except for the period of 1974-1981, which is adjusted to the census sequences. The 1961 census data were selected as base and are directly comparable by definition as well as lower age limit to the 1974 census.

Labour Force Projections for Bangladesh, 1974-2001 A.D. and their Inter-Sectoral Implications

Based on the above assumptions, projections of the labour force by economic sector for the whole nation show significant characteristics and issues of interest for the planning process. These are summarized in Table 6.1. It is estimated that the prospective size of the labour force will have reached about 22.58 million by 1981, 28.68 by 1991, and 39.82 million by 2001 A.D. From Table 6.1, it appears that the percentage distribution of the hypothetical projection for the 27 year period from 1974 to 2001, yields a shift in the agricultural sector from 79.02 percent of the total labour force in 1974 to 49.07 percent

TABLE 6.1 Projected Total Labour Force and Percentage Distribution by Economic Sector, 1961-2001

Economic Sectors	Labour Force (in million)					Percentage Distribution				
	1961*	1974**	1981	1991	2001	1961	1974	1981	1991	2001
Agriculture	15.08	15.82	16.50	17.81	19.54	86.37	79.02	73.07	62.10	49.07
Industry	0.95	0.99	1.07	1.28	1.66	5.44	4.95	4.74	4.46	4.17
Service	1.43	3.21	5.01	9.59	18.62	8.19	16.03	22.19	33.44	46.76
Total Labour Force	17.46	20.02	22.58	28.68	39.82	100.00	100.00	100.00	100.00	100.00

* Government of Pakistan (1961), Census of Pakistan, 1961 (Karachi): Volume II.

** Government of Bangladesh (1977), Population Census Report of Bangladesh, 1974 (Dacca): National Volume, Tables 14, 15, and 16.

by 2001. The agricultural sector will have registered a decline of 7.5 percent during 1974-1981, and will register -15.0 percent in the period of 1981-1991, and -21.0 percent during 1991-2001. However, this change in proportional share will take place at a rate of 0.24 percent increase per year in the absolute size of the agricultural labour force, with the estimate being about 16.50 million by 1981, 17.81 million by 1991, and 19.54 million by the end of this century. This suggests that an additional 3.72 million persons will have to be absorbed in agriculture over the 27 years since 1974. Given current economic conditions and production levels per unit of land area, the agricultural sector will be able to employ only a negligible proportion of future population growth.

In terms of the industrial sector, growth in the labour force is projected from 990,000 to 1.07 million during 1974-1981; to about 1.28 million by 1991, and to 1.66 million by 2001. This suggests that 670,000 industrial workers will be added to the labour force in the period 1974-2001. However, when the growth is seen in terms of the proportional share of labour force sectors to the total labour force, the relative positions of these sectors become clearer.

Generally speaking, in predominantly subsistence agricultural conditions and where there is only a nominal surplus capital generation, manufacturing and processing industries will expand only to a small degree beyond its present size. Table 6.1 shows that the percentage share of the industrial sector to the total labour force in the economy will decrease from 4.95 percent to 4.74 percent in the period 1974-1981, to about 4.46 by 1991, and to 4.17 percent by 2001. The rate of change in the industrial labour force is therefore projected at

-4.2 percent for 1974-1981, -5.9 percent for 1981-1991, and -6.5 for 1991-2001. As discussed above, the causes for such a projected pattern can be explained by the prevalence of the factors such as high population density and growth, the subsistence nature of the economy, low technological and educational level, and an uneven distribution of resources in the society.

The projections for the service sector suggest that the tertiary labour force will reach a size of 5.01 million by 1981, 9.69 million by 1991, and about 18.62 million by 2001. This is six times greater than in 1974. The percentage share of the service labour force to the total labour force is projected to be 22.19 percent by 1981, 33.44 percent by 1991, and 46.76 percent by the end of the century. The rate of change in the service sector is therefore projected at an increase of 38.4 percent for 1974-1981, 50.7 percent for 1981-1991, and 39.8 for 1991-2001. Two important determinants can be taken to explain such a projection of enormous increase in the service sector. First, because of the saturated or surplus condition of employment in subsistence agriculture of the country (Bose, 1963:386-88; Khan, 1977:153), the future population growth will drive the new entrants to seek alternative occupations. Under current population growth, and especially with the current child cohort, the large population entering the labour market within the next 15 years obviously will need to seek employment in various non-agricultural occupations. Secondly, with reference to the limited scope for industrial employment expansion, it is suggested that with increasing educational opportunities, and with better communication and transportation facilities in rural areas, rural-urban mobility will be intensified. If the condition of limited growth in manufacturing

prevails as projected, then the unemployed as well as the first job seekers will have to be absorbed in the traditional and informal (such as bazaar type trading, petty business, personal services) as well as modern service sectors (administrative, capital-intensive commercial sectors, transport and storage). This enormous expansion in the service sector as projected will be alarming to the economy, while manufacturing and processing may remain stagnant or even decline in a relative sense. This is because the gaps between the basic and non-basic economic sectors can be expected to widen in future.

Labour Force Projections for the Districts by Economic Sector

The labour force projections by economic sectors for the 19 districts of Bangladesh are presented in Table 6.2, 6.3, and 6.4. In the following sections, the distinctive regional patterns and characteristics that have become apparent from the projections of labour force will be discussed and explained. It should be mentioned that the lack of adequate data preclude the opportunity to make projections of the future trend of the labour force on the basis of long-term time series base data. The overall estimates are partly determined by only one decade of base period (1961-1974). Thus, the fluctuations in the trend line or curvilinearity could not be reflected in the projections.

Agriculture: Table 6.2 shows that four eastern districts, namely, Chittagong Hill Tracts, Chittagong, Comilla, and Noakhali; and one northern district, Mymensingh will experience a decline in the rate of growth of the agricultural labour force over the next few decades. Of

these, Comilla, Noakhali, Mymensingh, and part of Chittagong are high population density zones of the country (Choguill, 1981:5-7). As discussed earlier, the high man-land ratio in Comilla, Chittagong, and Noakhali districts suggest that a condition of saturation in agriculture has already been reached. Also, the gradual decline in the absolute size of the agricultural labour force may be partly explained by recent accelerated urbanization in the country, as well as by rural polarization which is taking place in these districts in particular. In the case of Chittagong Hill Tracts, the projected decline in agriculture is indicative of the non-availability of arable land and is partly due to the lack of modernization and development efforts in this area. This factor is also likely to stimulate out-migration from this region in the future.

The remaining 14 districts are expected to experience an increase in agricultural labour force in future decades. Two western districts, namely, Rajshahi and Kushtia will have more than two percent annual growth rate, resulting in an increase from 78.6 to 93.7 percent of labour force in agriculture in Kushtia during the 1974-2001. These districts have a potential for agricultural expansion, if the necessary land improvement can be made. Kushtia district, for example, developed extensive canal irrigation facilities during the 1960s. As discussed in chapter 5, the western and central districts will have a relatively higher net increase of population in the future due to in-migration. The central districts of Tangail and Dacca are projected to experience considerable increase in their agricultural labour force accompanied with higher increase in non-agricultural activities. But because of the low degree of urbanization in the western and northern districts

TABLE 6.2 Labour Force Projection for the Agricultural Sector by District, 1961-2001

District	Base Period		Rate of Change Per Annum (R) (%)	Projected Labour Force for Agricultural Sector		
	Labour Force in Agricultural Sector, 1961	Labour Force in Agricultural Sector, 1974		1981	1991	2001
Chittagong	770457	727555	-0.441	705452	675036	645931
Chittagong-Hill Tracts	190724	189950	-0.031	189535	188944	188355
Comilla	1989808	1331171	-3.092	1072089	786939	577632
Noakhali	803921	642766	-1.721	569817	479729	403884
Sylhet	1181736	1232178	0.322	1260225	1301403	1343927
Dacca	959711	1156966	1.438	1279478	1477335	1705788
Faridpur	826573	964378	1.186	1047867	1179828	1328407
Mymensingh	2086005	1962679	0.469	1899321	1812341	1729344
Tangail	407726	463816	0.991	497150	548968	606187
Barisal	784205	812841	0.276	828691	851871	875699
Jessore	565300	719635	1.857	819523	986739	1188074
Khulna	606501	677733	0.854	719494	783655	853538
Kushtia	284621	391262	2.448	464391	593188	757706
Patuakhali	287260	354331	1.614	396717	466212	547881
Bogra	429349	542672	1.983	623483	760237	926986
Dinajpur	540343	691734	1.900	790132	955465	1155394
Pabna	452197	566961	1.740	640389	762082	906900
Rajshahi	758286	1002062	2.144	1164345	1442800	1787848
Rangpur	1165364	1392188	1.368	1532098	1756705	2014240
Bangladesh	15080087	15822878	0.242	16500197	17809477	19543271

Sources: Government of Pakistan (1962), Census of Pakistan, 1961 (Karachi: Ministry of Home and Kashmir Affairs): Volume 2.

Government of Bangladesh (1977), Bangladesh Population Census Report 1974: National Volume (Dacca: Bureau of Statistics).

a larger portion of in-migration supposedly will be absorbed in agriculture.

By 2001 A.D., eight districts are projected to have more than one million persons in their agricultural sector (Table 6.2). Of these, six are in the relatively backward northern regions of Bangladesh. This suggests that the predominantly agricultural backward regions are more likely to experience considerable increase in their agricultural labour force. With a low degree of industrialization and urbanization, transportation and communication systems, the backward regions will absorb the majority of their in-migration in the agricultural sector.

Industry: Table 6.3 shows labour force growth in the industrial sector. This clearly demonstrates variations in the nation's regional economies. Of the 19 districts, ten show an inverse growth rate in this sector. The rate of negative growth will be over 5.0 percent per year in the case of Sylhet and Mymensingh districts. According to the projection, the respective size of the industrial labour force will only reach about 4,500 and 6,800 by 2001 A.D. Considering the physical condition of these two districts where large areas are covered by haor (depressions), there is limited opportunity for the establishment of industries, and particularly for large-scale manufacturing industrial complexes.

In contrast, the district of Tangail, with recently established administrative set-up and development, will likely attract more industrial investment in the future, particularly in the private sector. Closely linked and located in the vicinity of the capital city, this

TABLE 6.3 Labour Force Projection for the Industrial Sector by District, 1961-2001

District	Base Period		Rate of Change Per Annum (R) (%)	Projected Labour Force for Industrial Sector		
	Labour Force in Industrial Sector, 1961	Labour Force in Industrial Sector, 1974		1981	1991	2001
Chittagong	135754	85236	-3.580	66341	46376	32419
Chittagong-Hill Tracts	10743	7081	-3.206	5657	4105	2979
Comilla	46919	70202	3.100	87213	118904	162111
Noakhali	29543	32029	0.621	33453	35598	37881
Sylhet	38359	19145	-5.346	13169	7716	4521
Dacca	243388	299744	1.446	331665	383252	452863
Faridpur	36184	30355	-1.351	27616	24126	21077
Mymensingh	68992	32557	-5.777	21728	12193	6842
Tangail	11613	34230	8.315	61262	140706	323172
Barisal	31426	41815	2.197	48767	60750	75677
Jessore	39278	27403	-2.769	22574	17113	12973
Khulna	60868	90882	3.083	112776	153507	208949
Kushtia	40239	28231	-2.726	23326	17760	13522
Patuakhali	11512	8203	-2.607	6835	5266	4057
Bogra	18883	12728	-3.034	10292	7598	7085
Dinajpur	17710	26495	3.100	32913	44869	61168
Pabna	53983	79432	2.971	97795	131628	177166
Rajshahi	36611	33889	-0.594	32508	30632	28864
Rangpur	25615	28820	0.907	30709	33624	36816
Bangladesh	953045	988477	0.163	1066599	1275723	1660142

Source: Same as Table 6.2.

district is expected to experience the highest rate of increase (more than 8.0 percent per year) in the industrial labour force in the country in future decades. Khulna, Comilla, and Dinajpur districts are projected to have more than a three percent annual increase in industrial labour force, such that their labour force will have more than doubled by the end of this century. Khulna has considerable potential for industrial growth because of its port development projects. Moreover, with the implementation of the recent transportation development program which will connect Khulna to the central hinterland area of the country, further industrial growth can be anticipated (Kamaluddin, 1974:100-04). In Comilla district, which has a relatively well developed handloom industry, and is located in the vicinity of Kaptai hydro-electric project, there also appears to be a potential for industrial development. Moreover, since the 1960s, vigorous public programs have been undertaken in Comilla district to develop local industries based upon local raw materials and the transference of surplus capital from local agricultural development projects. In the north, Pabna will also gain in industrial labour force at a rate above the national average. This district has long been facilitated by a larger number of educational institutions, and also has a traditional background of small-scale textile industries.

In total, it is seen that the growth of employment in industry will give rise to an increasingly more polarized development in future, and hence there is the danger of increasing regional disparities. For example, by 2001, it is projected that the range in the industrial labour force will be from 16,000 to 44,000 in the five districts to as low as 3,000 to 7,000 in the other five districts. Thus, the employment

distribution patterns indicate that while the central part of the country, including the districts of Dacca, Tangail, Pabna, Comilla, and one port district, Khulna, will experience an increase in the numerical size of their industrial labour force, the more peripheral areas of the country will lose their industrial labour force.

The proponents of the "growth pole" model would consider such patterns as favourable and a positive condition for so-called "equilibrium" and "multiplier effects". However, the impact of such polarization in Bangladesh must be seen in as negative because this process of development requires more social economic costs. Geographic shifts of human resources as well as fixed capital resources to the "pole" or "core" areas will hinder development of local employment in hinterland areas. Jean Mayer (1977:79) called this a "domination mechanism", and argued that polarized development generated an exploitative system of domination. Mayer also pointed out that a policy of expansion and diversification of industrial activities within an "abstract" economic space or enclave, displays characteristics of a capital-intensive rather than a labour-intensive sector. This results in a reduction of the labour force in terms of both quantity and quality (Stuckey, 1975: 89-106).

Service: Table 6.4 shows that a considerably rapid growth rate in the service sector will take place throughout the country during the projected period. The annual growth rate in the service sector for the country as a whole is projected to about 5.7 percent per annum. In contrast, as seen above, the agricultural and industrial sectors were projected at a rate of only about 0.2 percent per annum. In the

TABLE 6.4 Labour Force Projection for the Service Sector by District, 1961-2001

District	Base Period		Rate of Change Per Annum (R) (%)	Projected Labour Force for Service Sector		
	Labour Force in Service Sector, 1961	Labour Force in Service Sector, 1974		1981	1991	2001
Chittagong	210461	431325	5.520	634756	1102362	1914440
Chittagong-Hill Tracts	13577	24092	4.412	32809	51003	79287
Comilla	78254	199389	7.195	329930	677454	1391034
Noakhali	47501	127136	7.573	216021	460673	982403
Sylhet	76620	177474	6.461	278973	532320	1015742
Dacca	288933	781080	7.650	1334308	2867382	6161905
Faridpur	66945	112192	3.972	148152	220395	327866
Mymensingh	120020	214116	4.453	292426	456454	712489
Tangail	23460	48451	5.579	71599	125083	218519
Barisal	69181	184420	7.542	312677	664737	1413201
Jessore	57912	103983	4.502	142507	223548	350675
Khulna	86342	210175	6.843	339329	672699	1333585
Kushtia	38158	78295	5.529	115296	200414	348371
Patuakhali	25341	44747	4.374	60776	94121	145761
Bogra	27873	53877	5.070	76829	127555	211773
Dinajpur	34520	57985	3.990	76666	114254	170271
Pabna	45495	110965	6.858	179345	356083	706990
Rajshahi	53780	119418	6.136	183493	338937	626064
Rangpur	65054	127397	5.170	182948	306799	514494
Bangladesh	1429427	3206507	5.728	5008840	9592273	18624870

Source: Same as Table 6.2.

regional context, eight districts will have a faster than average national growth rate in the service sector. These are Dacca, Noakhali, Barisal, Comilla, Pabna, Khulna, Sylhet, and Rajshahi. Three of these districts, Dacca, Khulna, and Rajshahi already have sizeable administrative functions because of their role as divisional headquarters. In the case of Noakhali, Comilla, and Barisal, where some of the highest man-land ratios prevail, and where there is little prospect for industrial expansion, future population has little alternative other than to become engaged in service activities.

Since the service sector is directly related to urban functions, it can be assumed that tremendous growth in this sector of the economy will result out of current rapid urbanization in the country (12.6 per annum during the 1961-1974 period) (Government of Bangladesh, 1979:142). Because some of the modern service functions such as transport and storage, banking and other commercial activities are supposedly expanded with industrial development, in the Bangladesh context these are expected to result in a polarized growth pattern. But the majority of the service sector expansion supposedly will take place in the traditional urban service sectors such as petty trading, informal activities like hawking, rickshaw peddling, small-scale repair shops. It is worth noting that since the modern sector of the service economy creates limited opportunity for unskilled labour employment, in a country like Bangladesh where a high population growth rate and high unemployment proportion prevail, growth in the informal service sector will accelerate in the future.

Regional Implications

In the preceding section, projected growth of labour force sectors has been examined by districts in Bangladesh over the period 1974-2001 A.D. The discussion was confined to either specific regional sizes of a given economic sector or to the overall regional distributional pattern. In order to understand future regional implications of labour force growth, it is necessary to examine them in terms of national average conditions and the degree of concentration and dispersion.

Table 6.5 shows the location quotients measured from the projections. These indicate the performance of the respective labour force sectors in each district and their position within the national picture. The location quotients in the agricultural sector indicate that the relative positions of the districts, which already have the higher agricultural labour force, will rise over time. These are the northern and western districts of the country, such as Sylhet, Mymensingh, Jessore, Kushtia, Bogra, Dinajpur, Pabna, Rajshahi, and Rangpur. It is interesting to note that although the size of the agricultural labour force will experience a decline in numerical totals in the Chittagong Hill Tracts and Mymensingh districts (Table 6.2), their relative position to the national average will increase (Table 6.5). The performance of agriculture will decline considerably in Tangail, Dacca, Chittagong, Comilla, Noakhali, Khulna, and Barisal in relation to the national average (location quotients ranging from 0.75 to 0.40 by 2001 A.D.). Of these, Tangail, Comilla, and Khulna will experience a relative rise in their position in their industrial

sector in relation to the national average. Nevertheless, the relatively industrialized districts of the country such as Dacca, Chittagong, and Kushtia may experience a diminishing position relative to the national average in the industrial sector. Careful attention must be given to explain this pattern. The degree of location quotient does not represent the degree of concentration in a numerical sense; rather, it expresses the relative position of each location in terms of the national average. In the case of Bangladesh, the districts of intermediate size industrial labour force, with higher growth rate, will experience more industrial expansion compared to the districts with a larger industrial labour force in the projected decades. The resultant pattern relative to the national average, therefore, will be a decline of position for larger size industrial areas. In other words, some districts of intermediate size industrial labour force will join in the polarization process in the future decades.

In contrast, some negative effects are also indicated by the projection of the industrial labour force. Mymensingh and Sylhet districts will reach the lowest position in the case of industrial labour force to the national average by the end of this century, and the projected location quotients for the industrial sector are 0.07 and 0.05 for 2001 A.D. respectively. Moreover, other location quotients of a value less than 0.5 in the case of industrial labour force are indicated for Chittagong Hill Tracts, Chittagong, Faridpur, Jessore, Kushtia, Patuakhali, Bogra, Rajshahi, and Rangpur district by 2001. Thus, out of 19 districts, twelve will experience a decline in their relative position in the industrial sector. This is indicative of increasing inter-regional employment disparities in the case of the

TABLE 6.5 Projected Location Quotients by Economic Sector and District, 1974-2001

District	Agriculture				Industry				Service			
	1974	1981	1991	2001	1974	1981	1991	2001	1974	1981	1991	2001
Chittagong	0.74	0.69	0.60	0.51	1.39	1.00	0.57	0.30	2.16	2.03	1.81	1.58
Chittagong-Hill Tracts	1.09	1.14	1.25	1.42	0.65	0.53	0.38	0.26	0.68	0.65	0.62	0.63
Comilla	1.05	0.98	0.80	0.55	0.89	1.24	1.69	1.82	0.78	1.00	1.28	1.40
Noakhali	1.01	0.95	0.78	0.58	0.81	0.87	0.82	0.64	0.99	1.19	1.41	1.48
Sylhet	1.09	1.11	1.14	1.16	0.27	0.18	0.09	0.05	0.78	0.81	0.86	0.92
Dacca	0.65	0.59	0.50	0.42	2.71	2.39	1.82	1.28	2.18	2.04	1.81	1.59
Faridpur	1.10	1.17	1.33	1.61	0.55	0.48	0.38	0.30	0.63	0.55	0.46	0.42
Mymensingh	1.12	1.17	1.28	1.44	0.29	0.21	0.12	0.07	0.60	0.60	0.60	0.62
Tangail	1.07	1.08	1.08	0.40	1.26	2.06	3.88	2.49	0.55	0.51	0.46	0.15
Barisal	0.99	0.95	0.87	0.75	0.81	0.87	0.87	0.77	1.11	1.18	1.26	1.28
Jessore	1.07	1.14	1.29	1.56	0.65	0.49	0.31	0.20	0.76	0.65	0.54	0.48
Khulna	0.88	0.84	0.78	0.73	1.88	2.04	2.14	2.09	1.34	1.31	1.25	1.19
Kushtia	0.99	1.05	1.18	1.38	1.14	0.82	0.49	0.29	0.98	0.86	0.74	0.67
Patuakhali	1.10	1.17	1.33	1.60	0.41	0.31	0.21	0.14	0.69	0.59	0.50	0.45
Bogra	1.13	1.20	1.57	1.72	0.42	0.31	0.22	0.15	0.55	0.48	0.49	0.40
Dinajpur	1.13	1.20	1.38	1.70	0.69	0.78	0.90	1.06	0.47	0.38	0.31	0.26
Pabna	0.95	0.95	0.98	1.03	2.12	2.26	2.37	2.37	0.91	0.88	0.85	0.84
Rajshahi	1.10	1.15	1.28	1.49	0.59	0.50	0.38	0.28	0.65	0.60	0.56	0.55
Rangpur	1.14	1.20	1.35	1.60	0.38	0.37	0.36	0.34	0.51	0.47	0.44	0.43

Sources: Calculated from: Tables 6.2, 6.3 and 6.4.

industrial sector over the future decades.

Table 6.5 indicates that out of 19 districts of Bangladesh, twelve are projected to experience a downward trend in their relative position in terms of the national average in future decades in the service sector. On the other hand, the districts which show a rise in their relative positions in the service sector for future decades, similar to that of the industrial sector, are intermediate size districts of the service labour force. Thus, while in 1974, four districts have indicated a position above the national average in the service sector (location quotient more than 1.00), by 1981 their number will have risen up to six and is expected to continue up to 2001. It should be mentioned that although the districts with a larger size service labour force are projected to experience a decline in their relative positions in terms of the national average condition in this sector; their location quotient values will remain much above the national average in the future decades. This suggests that the polarization process in the service sector will be continued in future decades in the country.

The overall patterns of location quotients for different economic sectors suggest that a relatively low degree of inter-regional variation in the agricultural sector will be continued, while non-agricultural activities will follow greater concentration over time, with increasing inter-regional disparities in Bangladesh.

Summary

On the basis of the constant rate of population growth since

1974, the projections suggest that Bangladesh will have an additional 2.56 million total labour force by 1981, and that this will grow to 8.66 million by 1991, and to 19.80 million by 2001 A.D. Under the prevailing socio-economic conditions, where there is considerable unemployment and underemployment, such an additional burden in the job market will clearly have an adverse effect on the overall welfare and development of the society.

The projections indicated that there will be a gradual decline in the proportion of agriculture in the future. On the one hand, substantial growth in the service sector is projected for the country as a whole. This is because the level of technology and production level of agricultural land in the country are very low. Moreover, a saturation condition of employment in the agricultural sector prevails, especially in the districts of high man-land ratios. On the other hand, there is little possibility for large-scale investment from the surplus capital generation in agriculture. Under these circumstances, population pressure will stimulate people to seek alternative occupations. Thus, a proposition that the service sector will expand at a steady rate seems to be plausible. Also, because the modern service sector creates limited opportunity for employment, the informal and traditional service sector will expand more in the future decades.

From a regional perspective, it was observed that if the present trend of inter-regional human resource and physical capital transfer continues, spatial polarization in non-agricultural activities will accelerate over the time. Benefits of agglomerated growth would favour only a few selected regions in already advantaged locations, such as the capital city of Dacca as well as in Chittagong and Khulna with

their port facilities, and in the textile districts of Pabna, Kushtia, Tangail, and Comilla.

The overall patterns of future regional growth of the labour force are indicative of accelerating disparities over the decades. The implications will be detrimental for the local employment situations as well as for the demographic structure within the hinterland areas. This is particularly applicable to the relatively backward northern, western, and some eastern districts. Political and social unrest will emerge from regional employment polarization, unless policies are implemented for a favourable and rational distribution of employment opportunities among the regions of Bangladesh.

CHAPTER 7

SUMMARY AND CONCLUSION

This study examined the labour force of Bangladesh from a geo-demographic perspective. The main objectives of the research were four fold, namely: (a) to determine the size of the labour force on a longitudinal basis in relation to population size and growth; (b) to analyze the pattern of labour force distribution and its variation over time on a cross-sectional basis; (c) to determine the dynamics of labour force change; and (d) to assess some of the policy issues and planning implications emerging from the foregoing findings. In examining various national and international data sources, it was found that only the national censuses provided adequate and extensive quantitative information. While labour force data for much of the underdeveloped world are limited and often incomparable, the Indian sub-continent has had detailed census data since 1871. In this study, census data for the districts of Bangladesh since 1901 have been utilized.

The Findings

The prime objective of this thesis was to determine the longitudinal pattern of the labour force in Bangladesh in relation to population phenomena. From the analysis, it was seen that since 1901, labour force participation rates in the country have, on average, accounted for less than one-third of the total population. Some fluctuations in these trends occur through time, with the population growth rate periodically outstripping the labour force growth rate,

while at other times, the labour force growth rates exceed the population growth rate. Such apparent differential longitudinal trends in labour force and population growth were in part due to changes in successive census definitions for economic activities. A change in the concept of unpaid labour force, for example, during 1951-1961, resulted in inclusion of females who were helping the family in the labour force in the 1951 census, but their exclusion in the 1961 census. The differences in the labour force trend also reflect changes in the demographic structure of Bangladesh which has resulted in a decreasing proportion of population being reflected in the adult age cohorts. Thus while there has not been any significant change in the economic structure of the country, it is clear that labour force participation rates have been determined by demographic trends. During the first half of this century, Bangladesh experienced slow population growth because of high mortality. Considerable out-migration of adult population to India and Burma further lowered labour force participation rates in what was then East Bengal. Since the mid-20th century, and as a consequence of a declining mortality rate and constant fertility rate, Bangladesh has entered into a demographic transition. Rapid population growth has greatly changed the demographic structure of Bangladesh, creating a high child dependency. This has resulted in declining labour force participation rates. With its traditional system of production, the economy of Bangladesh has had difficulty coping with such population explosion. While the labour force data for the 1981 census have yet to become available, preliminary population data have been published, and indicate a slackening population growth. This would likely have a positive impact upon the labour force rates for

1974-1981.

This study has demonstrated that labour force participation in Bangladesh has been dominated by males. Because of the youthful age-sex structure, male participation rates of the lower age cohorts (15-24 years) are considerably below the averages for industrial developed countries. However, such short-falls arising from age structure are partly compensated for by higher levels of participation of males in the youthful age group (15-19 years) and the old age cohort (65 years and over). In terms of female participation in economic activities, extremely low rates are found for all age groups in Bangladesh, when compared to other countries. There are three reasons for this situation. Firstly, under-reporting of females in economic activities occur because of the limitations of western definitions. Females who are actively engaged in family helping roles of agriculture and housekeeping, because they do not earn a wage or salary, are not included in the labour force. Secondly, the reluctance of females to report themselves as economically active, resulted from the prevailing purdah system. Thirdly, the low level of education as well as job opportunities for females has restricted females from participation in the labour force. Together, these factors have resulted in a very low level of labour force participation in the country by females.

A second major objective of the thesis was to examine the patterns of regional distribution of the labour force. The analysis of the resultant special patterns showed three broad zones of labour force participation: (1) Participation in the "high" labour force zone in the south-eastern district of Chittagong Hill tracts can be attributed to higher female participation rates, particularly in agricultural

activities. The favourable religio-cultural factors are responsible for this high female participation rate in this district; (2) The "moderate" labour force participation zone was found in the central and northern regions of Bangladesh. The favourable ecological conditions for agriculture in the northern districts, particularly the factor of yearly inundation in the flood-plains as well as relatively low man-land ratios, led the region in a moderate labour force participation. Participation in the central districts is attributed to a higher concentration of non-agricultural establishments; and (3) The western and southern districts are categorized as the "low" labour force participation zone. Lack of adequate water in the slack season by the "moribund" river system as well as poor transportation and communication systems account for such "low" labour force participation rates in these regions.

The longitudinal-structural analysis of labour force sectors showed that the country experienced a constant rate of participation in agricultural activities since 1901. Throughout the period of 1901-1974, over 80 percent of the total labour force has remained in agriculture. The proportion of labour force participation in industry declined since 1901; in contrast, the service sector has been increasing. This trend does not follow Colin Clark's hypothesis of industrial "equilibrium" and the concept of relative demand of sectoral goods. However, historical development and experiences in Bangladesh during this century can explain the deviation from the hypothesized sectoral pattern. Colonial domination up to 1947, as well as a semi-colonial relationship during the Pakistan regime (1947-1971), resulted in Bangladesh being little more than a hinterland for the production of

primary products for export. Economic and demographic structure was governed by the rules of external political powers and organization. Until the Liberation in 1971, Bangladesh faced an unprecedented resource transfer from its territory. At the same time, demographic growth since the 1950s has increased demand for food and other consumer goods, increasing its dependency upon foreign imports and aid. All these factors in aggregate resulted in failure to show the so-called "trickle-down" effects for the development of basic industrial means of production. With increasing population growth and unemployment in the agricultural sector, the service sector increased in a distorted way; there was no substantial demand for a service sector designed to support an industrial sector as occurred in developed countries.

The cross-sectional regional analyses using measurements of location quotients for each sector, identified the existence of regional disparities of employment between the districts. The distribution of the agricultural labour force was found relatively uniformly represented when compared to national average conditions. Manufacturing and industrial sectors, however, tended to be concentrated in the growth regions of the central and southern part of Bangladesh. The concentration of the service sector was found to be less than it was in the case for the industrial sector, but clearly more so than agriculture. The overall pattern of spatial configuration of employment sectors in the country is indicative of the low degree of industrialization and its uneven regional distribution. It is evident that favourable modernization factors, such as location of new industries, urbanization, improvement of transportation and communication, as well

as development of public utilities have concentrated in favoured locations, at the expense of peripheral backward regions.

It was observed in the analyses of regional variations of labour force growth during 1961-1974, that the central and north-western and north-eastern parts of the country experienced relatively faster growth rates. In the central districts, this was caused by the expansion of non-agricultural sectors; in the northern districts, it was due to favourable employment conditions in agriculture. The correlation analyses showed that a significant positive relationship existed between regional variations in agriculture and the pattern of inter-regional migration during the period of 1961-1974. The overall insignificant growth of the agricultural labour force was manifested through a decrease in the eastern districts and increase in the western districts. The industrial sectors also showed an insignificant increase for the whole nation during the 1961-1974 period. The positive increase took place in a few central and textile districts of the country. Finally, economic activities relating to services indicated a considerable increase, both at the national and regional level. The overall pattern repeats the deteriorating economic conditions in the country. The changes in agriculture are attributed to the geographic shift of population, but without change in occupation. On the other hand, population growth enhanced the large-scale increase in the service sector during 1961-1974.

The findings of the projections for the respective economic sectors suggested an increased polarization effect of employment and development between the regions. The labour force in the advantaged growth regions was predicted to grow at a much faster rate than in the

backward regions. On the one hand, such growth will create tremendous pressure on the socio-economic environments in the growth regions, particularly by increasing social costs for health, housing, transportation and communication, and for the maintainance of law and order. On the other hand, demographically, the shift of adult age cohorts from backward source regions to the growth regions will lead to higher dependency ratios in the areas of origin. This will have a negative impact upon the socio-economic condition of the areas of origin through lowering production levels and income as well. The social opportunity costs of the growth regions vis-a-vis the peripheral areas therefore will increase over time. Consequently, uneven development compared to employment opportunities will be detrimental to overall welfare and national integration, at least in the long-run.

Policy Issues and Implications

This thesis has concerned itself with some of the implications of rapid population growth that Bangladesh has experienced since the 1950s. While it is hoped that the trend during the 1970s has seen a slowing of population growth, it will take considerable time before an age structure of adult characteristics is achieved. However, in order to improve substantially the qualitative and quantitative characteristics of an economically active population, effective and pragmatic population policies and programs should be implemented. Even if fertility levels can be reduced to the replacement level in the foreseeable future, the country will need to greatly expand employment opportunities because of the existence of a large volume of unemployment

and the current high level of child dependency. Since most new entrants into the labour force over the next 15-20 years are already born, it will be necessary to formulate plans and develop measures that will permit these human resources to be productively employed. In this respect, emphasis must be on rural conditions and requirements for change in the overall socio-economic structure.

Given the male domination in labour force participation and their role in income-generating activities, "housewives", or the non-economic role of females, should be considered a leading hinderance for development. While females do not constitute a sizeable portion of total labour force according to the census enumeration, they nevertheless are in the adult age cohort, and must therefore be considered as a potential group for labour force expansion. Large-scale and rural-based programs aimed at facilitating female education, vocational training, and child and home development should be implemented. Since the 1960s, the Bangladesh Academy for Rural Development has had remarkable success in undertaking such programs at the Kotwali thana area of Comilla district. Programs included the deployment of females in economic activities outside the teaching, nursing, weaving, commercial gardening, and tailoring occupations. In respect to Bangladesh conditions, efforts should be made to expand such facilities, specifically among the low-income groups of population.

The census concepts of economic activities should also be redefined because of their limited applicability. On the one hand, the classification and role of occupations should be measured by the nature of relationship with the production system, not the products. Thus females who contribute to a large extent to household economies without

any wage or salary will be qualified. On the other hand, the labour force classification according to a market-based economy is limited for traditional activities. But the economic role of females in the peasant economy of Bangladesh is considerable, and needs to be included with classified groups of the labour force.

The structural analyses of the labour force for the whole nation illustrated a stagnant condition in agriculture and a deteriorating condition in the industrial sector. Among the non-agricultural sector, service has been expanding at a relatively rapid pace. In order to break this trend in economic structure and growth, policy formulators should pay attention to increasing agricultural productivity. While the Ministry of Agriculture is attempting to introduce high yielding varieties (HYV) of crops, they have yet to recognize the fact that more assured distribution systems of means and services for agricultural extension are needed to increase land productivity. Blair (1978:77) suggests that "green revolution" strategies that have been vigorously experimented within Kotwali thana of Comilla district, while showing an increase in gross crop production in the area, adversely affected the overall development through increasing class-polarization vis-a-vis mass poverty. These planning processes also raise the dependency for imported technologies and machinery-tools (Dewan, 1978:ii). Therefore, it may be suggested that only considerable achievements and successes in rural development projects and programs ensuring a better distribution system will modify the deteriorating rural socio-economic environment as well as reduce the rate of parasitic type of urbanization.

The stepped-up out-migration of wage labour on fixed-term contracts from Bangladesh to the Middle East is a comparatively recent

phenomenon; by 1977, manpower-export stood as the second largest foreign-exchange earner for the national economy. In 1976, about 6,087 persons emigrated from Bangladesh for employment; it rose up to 15,727 in the year of 1977 and 22,809 in 1978 (Government of Bangladesh, 1979: 554-555). The World Bank projected that the number of migrants would amount to 191,400 during 1980-1985, and assumed that migrants might come back at the rate of 20 percent of total migrants in every year from 1980 onwards. In 1976, the Bureau of Manpower, Employment and Training (BMET) was established in order to facilitate the manpower-export policies. However, in an extensive survey on the impact of remittance money by the National Foundation for Research on Human Resource Development (1979), it has been found that only insignificant shares of savings from remittances were used for productive investment (7.1 percent); rather, a major portion was used for purchasing land and construction. Such a process of investment in the non-productive sectors resulted in local inflation as well as enhanced the social-polarization. Appropriate policy measurements are needed for the development of means of production, such as basic industrial machineries, and to restrict importation of luxury and consumer goods. Moreover, planning is required for facilitating re-use of repatriated skills of labour force.

This study has focused on the issues of regional employment disparities and their implications over recent decades. Results of the analysis have indicated that most of the northern and western peripheral districts of Bangladesh are caught in the grip of "backwash effects". In contrast, growth of central and southern industrialized districts are indicative to some degree of "cumulative causation" effects of development of employment. Based upon data derived from

the projections, it may be assumed that regional gaps in employment distribution will continue to widen in the coming decades. The conventional growth approaches maintain that such polarized growth patterns are necessary for optimal economies, as well as for "trickle-down" effects. Seers (1969) suggested that development should be considered in relation to three main factors: poverty, employment, and equality. He further pointed out that it is quite possible for per capita income to be increasing in a period of national economic extension, while at the same time poverty also increases and the gap between classes and regions grow larger. In an effective and appropriate development planning program, policy measures must therefore be aimed to minimize the distributional gaps.

While implementing policies to minimize the developmental gap between regions, attention must be paid to a balanced and rational development. In other words, development in growth regions should not be hampered since this would adversely affect the development of the whole country. In the Bangladesh case, part of the problem stems from the current planning strategy, which is "top to bottom" in nature. Decentralization of decision-making power while emphasizing local level planning for development would clearly enhance a more rational distribution of employment in relation to population size and structure.

Finally, the findings of the study can be taken as a generalization of regional, demographic and economic systems operating in underdeveloped countries. Lack of any information on productivity levels of labour precluded a comprehensive regional and structural analysis. It is hoped that by examining the demographic and economic characteristics of Bangladesh, this study has contributed to the further

understanding of micro-level dynamics of the labour force and its socio-economic implications in underdeveloped countries. Further research on the labour force from a geographic and demographic standpoint should aim at understanding the patterns and processes of social mobility and geographic movements at the micro-regional level, as well as their impact on the demographic and economic structures in the areas of origin and destination in particular.

NOTES

CHAPTER 1

1. Underdevelopment of a country is used in the text meaning the geographic territory or nation characterized by: (i) sectoral inequalities in productivity; (ii) disarticulation of the economic system; and (iii) external domination. Notably, an underdeveloped country should be considered the result of particular kind of historical evolution of the concerned country (not a sum of a series of quantitative economic indices). For further details, see Stavenhagen (1964); and Frank (1966).
2. A size of 87.05 million population in Bangladesh was enumerated in the "Population Census of Bangladesh 1981". However, the Population Reference Bureau (1980) estimated a size of 90.6 million for Bangladesh in 1980. According to the "Bangladesh Population Census 1974", the population size was 71.48 million. This figure is quite extensively used in this study.
3. Khan *et al*. (1975) compiled 370 studies in this area of fertility, family planning and other demographic growth in Bangladesh.
4. Development is used in the text to refer to the process of general improvement in the levels of living together with decreasing inequality of income distribution, and the capacity to sustain continuous improvements over time. This includes an overall growth plus diminution of regional and social tensions among regions, and equalization of accessibility to productive resources.
5. Economic growth in this study is synonymous with 'growth' which is defined by conventional economic concepts as "the level and rate of

increase of aggregate or per capita national income, gross national or gross domestic product". For a comprehensive discussion, see J.E. Kocher (1973).

6. According to Colin Clark (1940), in the U.S.A. the maximum or stabilized condition in secondary occupation was shown in the Census of 1920, in Great Britain of 1901, in France of 1901, in Germany of 1925, and in Canada of 1911. For details, see C. Clark (1940:7-9).
7. D.D. Husband (1971) has emphasized regional employment policies to minimize the dichotomy of economic benefits and social costs of labour migration. For an extensive discussion on the contradictions between the national and regional growth issues, see D.D. Husband (1971:538-555).
8. The commonly used approaches are: (i) 'the surplus method' calculates the difference between supply of labour and estimates demand for it; (ii) 'the productivity approach' estimates the excess of labour force over the level that equals the marginal productivity of labour of wage; and (iii) 'the time approach' estimates unemployed persons, or those who work for less than 290 days in a year.
9. In the classical economic sense, productive work means work that creates economic profit. In other words, work that adds value and helps the means of production for capital accumulation. More specifically, productive material activity means activity that extracts resources from nature... In contrast, "unproductive" activity extracts nothing from nature. Amin (1974:182) notes that "the sphere of 'productive' activity puts at the disposal of society material objects where they are to be consumed. It can itself be subdivided into two sectors: the 'primary' one, in which landed

property has, historically at least, played the dominant role (agriculture), and the 'secondary' one, in which it is capital that plays the dominant role (industries in the strict sense, together with mining and transport)". In this study the position taken by Amin has been pursued.

10. According to the 'gainful worker' standard, the economically active population includes those who report some usual occupation in the census without any reference period. The 'labour force' standard counts only the number of people actually at work or seeking work during some particular period.

11. Religious and social seclusion of women.

CHAPTER 2

1. Jaffe and Stewart (1951) discussed elaborately the nature and the principles of labour force analysis (LFA), and pointed out that with an objective of measuring the extent of unemployment, LFA was developed in the U.S.A. during the depression period of the 1930s. For further details, see Jaffe and Stewart (1951).

2. In this thesis, the terms "labour force" and "economically active population" are used interchangeably.

3. The terms "participation rate", "activity rate", "proportion of economically active population" are used as synonyms and refer to the same definition.

4. The International Labour Office (1981:3-5) reports that one of the difficult areas for making international comparisons of participation rates is the use of different definitions of minimum age of working population among the national censuses.

5. The 1974 census of Bangladesh underestimated the population by 6.9 percent and hence, adjusted figure attains at 76.40 million (Government of Bangladesh, 1979:49). However, considering the use of relative figures or percentage figures in the study, unadjusted data are used in the text.

6. Annual exponential growth rate is a compounding type of change in which the compounding takes place continuously, that is, a constant rate of change is applied at every moment of time. The average exponential growth rate is computed by the following formula:

$$\frac{P_2}{P_1} = e^{rn}$$

$$\text{or, } r = \frac{\log \frac{P_2}{P_1}}{n}$$

where, r = average annual exponential growth rate

P_1 = total population (or labour force) in base period

P_2 = total population (or labour force) in terminal period

n = number of study years

For further details, see Farooq (1968:82); and Shryock *et al.* (1973:377-380).

7. The "median age" is simply the central age in terms of magnitude of a given population. Thus, the "median age" of a population divides that population into two equal groups, one half being older and one half being younger (Overbeek, 1980:128).

8. The "dependency ratio" is defined as the number of persons in a

population who are not economically active for every 100 economically active persons in that population (Pollard, et al. (1974:15). A crude method of measuring the "total dependency ratio" (TDR) is also often used in demographic studies; which is defined as the proportion of children and aged population to the adult age cohort. The TDR is calculated by:

$$TDR = \frac{P_{0-14} + P_{65+}}{P_{15-64}}$$

where, TDR = total dependency ratio

P_{0-14} = population aged 0 to 14 years (children)

P_{15-64} = population aged 15-64 years (adult)

P_{65+} = population aged 65 and over (aged)

(Source: Overbeek, 1980:140)

CHAPTER 3

1. Although in earlier and later stages of this age-span (20-65), the social laws are not absolute because some of them are being classified as student and early retired persons.
2. The age cohort 0-10 has been considered because, in the Bangladesh censuses, lower age limit of the labour force is considered as population aged 10 years and over (Government of Pakistan, 1951, 1961; Government of Bangladesh, 1977).
3. The conceptual problems regarding women's work are explicitly discussed by Papanek (1977:16-19) and Arizpe (1977:28-29). Papanek argued for an "interactional approach" to women's and men's work because, according to her view, this challenges the

assumption: much of women's work, particularly housework, is a nonoccupation in many societies, since "with the separation of the workplace from the home, housework (has) lost its economic value". For more discussion, see Papanek (1977). However, Arizpe analyzed the Mexican women in the informal labour sector. She argued that if unpaid male labour is to be included in the informal labour sector, such as street peddlers, then women's voluntary community service and their unpaid domestic labour must also be taken into account (Arizpe, 1977:25).

4. According to the 1974 census definition, an "urban area" is considered "a concentration of population of at least 5,000 persons in a continuous collection of houses where the community sense is well developed and community maintains public utilities" (Government of Bangladesh, 1975:2).

5. A major portion of this section was presented at the XV Bengal Studies Conference (Lake Geneva, Illinois: May 1-3, 1981) in a paper entitled "Economically Active Population in Bangladesh: A Spatio-Temporal Analysis".

6. Haors are annually flooded depressed areas. In Bangladesh, the broad haor region spreads over 4,586 square miles in four subdivisions of Sylhet and Mymensingh districts. See, Chowdhury *et al.* (1977).

7. For a detailed discussion on the patterns of labour force distribution in 1961, see Haque (1977:47-60).

CHAPTER 4

1. The groupings of economic sectors are sometimes defined in different

ways, with border-line industries arbitrarily assigned to one sector or another. For example, mining can be grouped either with the agricultural sector (Clark's classification) or with manufacturing (Kuznets' classification); transportation and construction are sometimes grouped with industry (Kuznets') and sometimes with services (Clark's). The classification used here is determined by the available data on economic sectors and local conditions, which is also recommended by the International Bank for Reconstruction and Development (IBRD) and the World Bank for a general use of international comparison. For details see, Clark (1957:490); Kuznets (1957:86); and IBRD and the World Bank (1980:158).

2. Nurul Islam (1978:9-10) summarized the major postulations of "growth-center" or "trickle down" policies. He points out that "the faster is the rate of aggregate growth, the greater is the likelihood of a favourable impact on employment and income on the lower end of income scale, provided that the distribution of the output resulting from growth is directed towards the poor, and that the composition of output and choice of techniques are labour intensive. ... The 'trickle-down' theory in the objective circumstances of Bangladesh is particularly deficient and ineffective in ameliorating the conditions of poor" (1978:9).

3. IQ for sector or industry "i" in the given region "j" is:

$$LQ = \frac{R_{ij}/N_i}{R_j/N}$$

$$\text{or,} \quad \frac{R_{ij}/R_j}{N_i/N}$$

where, R_{ij} = number of employed labour force in industry "i" in a given region "j"

R_j = number of total employed labour force in the region "j"

N_i = number of employed labour force in industry or sector "i" in the whole country

N = number of employed labour force in the whole country

This is to note that the index is equal to unity where proportion of a region's labour force in a specific sector or industry is the same as proportion of the whole country's employed labour force in that sector. Indices different from one indicate the degree to which employment in a particular sector is over-represented ($LQ > 1$) or under-represented ($LQ < 1$) in a given region. For further details on this technique and application, see (Isard, 1960:124).

4. The "index of concentration" (I) is a measure to describe the extent of relative concentration of a given distribution from a hypothetical even distribution. This is particularly useful as a method of comparison of a number of spatial distributions. In a "Lorenz curve", the "index of concentration" is the ratio of the area of

the right-angled distribution, the area contained by individual curves. The index (I) may be found by:

$$I = \frac{A - R}{M - R}$$

where, A = the area cumulative percentage total

R = the regional cumulative percentage total

M = the maximum cumulative percentage total assuming 100 percent of frequencies in rank 1

Applying a "Lorenz curve", we get

$$I = \frac{A - 550}{450}$$

The index will range from a maximum value of 1 (maximum concentration, when the "Lorenz curve" deviates as much as possible from the diagonal) to a minimum value of 0 (minimum concentration, when the "Lorenz curve" corresponds exactly to the diagonal. Thus, the index (I) indicates the relative magnitude of concentration, depending on its position in a continuum from 1 to 0.

For further details, see Hammond and McCullagh (1975:20, 58-60).

5. McGee (1971) also found empirically similar patterns in the case of Java, Indonesia. See McGee (1971:75-86).

CHAPTER 5

1. The large scale subsidies and free rationing of food in urban areas of the country can be seen as a particular example of such response. In contrast, levy (compulsory sale) of food and other agricultural products to the governmental purchasing agents by the peasants, particularly of frontier or border areas, is a direct repressive

role of governmental policy.

2. Redfield (1961:60-74), Reisseman (1964:158, 167-168), Sjoberg (1966:237), Berry (1962:15), Lampard (1964:332) are the exponents of the concept of "rural-urban continuum", and maintain that industrialization and development is a process of transfer of population from a folk society to urban society; based on cultural homogeneity in each entity. However, this school of thought wrongly denies that the society is a single system as well as the complex dynamics of inter-relationship of social and spatial organization (for details see, McGee, 1971:35-58).

CHAPTER 6

1. Since the 1960s, increasing importance of local and sub-national level projections of population and manpower among the governments emerged, particularly in the underdeveloped countries: (i) because of amplication of regional disparities through the implementation of "trickle down" policies; and (ii) to undertake spatial policy measures, particularly the action programs on family planning and population control.

APPENDICES

APPENDIX I Sources of Data

(i) The official statistical materials for this thesis have been obtained from the following sources:

(a) Government of India, Census of India, 1901-1931, -all census reports on East Bengal, Bengal and Assam;

(b) Government of Pakistan, Census of Pakistan, 1951-1961, -all census reports on East Bengal and East Pakistan;

(c) Government of Bangladesh, Bangladesh Population Census Report 1974, National Volume; and the Statistical Yearbook, 1979.

(ii) Relevant materials from different research organization and individual researches have been collected from:

(a) the Pakistan Institute of Development Economics, Karachi;

(b) the Bangladesh Institute of Development Studies, Dacca; and

(c) various economic and demographic journals published by different international and national research organizations.

(iii) International statistical materials have been obtained from:

(a) the International Labour Office, Year Book of Labour Statistics, 1980 and 1981;

(b) the United Nations, Statistical Yearbook, -all volumes from 1975-1979;

(c) the World Bank, World Development Report, 1980; and

(d) the Population Reference Bureau, Inc., World Data Sheet, 1980.

APPENDIX II Population by Age Cohort, Sex, and Rural-Urban Residence, Bangladesh, 1974 ('000)

Age Cohort	All Areas			Rural			Urban		
	Both Sexes	Male	Female	Both Sexes	Male	Female	Both Sexes	Male	Female
0 - 4	12073	6015	6058	11174	5562	5612	899	453	446
5 - 9	13118	6600	6519	12152	6112	6040	966	487	479
10 - 14	9181	4987	4194	8332	4542	3790	849	445	404
15 - 19	5018	3154	2765	5293	2808	2485	625	345	280
20 - 24	4912	2416	2496	4327	2063	2264	585	354	231
25 - 34	4828	4389	4539	7993	3816	4177	936	574	362
35 - 44	7073	3779	3294	6419	3367	3052	655	414	241
45 - 54	4865	2663	2202	4464	2408	2056	401	255	146
55 - 64	3034	1695	1339	2825	1566	1259	210	127	83
65+	2374	1373	1001	2226	1288	938	148	85	63
Total	71478	37071	34407	62204	33532	31672	6274	3539	2735

Source: Government of Bangladesh (1977), Bangladesh Population Census Report 1974: National Volume (Dacca: Bureau of Statistics): Table 4, 43-92.

APPENDIX III Labour Force by Age Cohort, Sex, and Rural-Urban Recidence, Bangladesh, 1974 ('000)

Age Cohort	All Areas			Rural			Urban		
	Both Sexes	Male	Female	Both Sexes	Male	Female	Both Sexes	Male	Female
10 - 14	2353	2087	266	2222	1984	238	131	103	28
15 - 19	2265	2139	126	2065	1952	113	199	187	12
20 - 24	2109	2030	79	1833	1765	68	277	266	11
25 - 34	4381	4254	127	3818	3711	107	562	542	20
35 - 44	3846	3739	107	3427	3336	91	419	403	16
45 - 54	2699	2619	80	2445	2375	70	254	244	10
55 - 64	1678	1625	53	1562	1513	49	116	112	4
65+	1190	1157	33	1132	1101	31	58	56	2
Total	20521	19650	871	18504	17737	767	2016	1913	103

Source: Government of Bangladesh (1977), Bangladesh Population Census Report 1974: National Volume (Dacca: Bureau of Statistics): Table 14, 347-370.

APPENDIX IV Population, Labour Force, and Participation Rates by District and Sex, Bangladesh, 1974 ('000)

District	Population			Labour Force			Participation Rates		
	Both Sexes	Male	Female	Both Sexes	Male	Female	Both Sexes	Male	Female
Chittagong	4316	2309	2007	1320	1264	56	30.58	54.73	2.79
Chittagong-Hill Tracts	507	271	236	224	167	57	44.03	61.35	24.12
Comilla	5819	3012	2807	1660	1552	108	28.52	51.53	3.83
Noakhali	3234	1658	1576	848	825	23	26.23	49.75	1.48
Sylhet	4760	2458	2302	1456	1382	75	30.59	56.17	3.27
Dacca	7612	4066	3546	2311	2210	101	30.36	54.36	2.84
Faridpur	4060	2087	1973	1124	1097	27	27.69	52.58	1.37
Mymensingh	7566	3910	3656	2238	2162	76	29.58	55.29	2.08
Tangail	2077	1069	1008	557	545	12	26.84	50.99	1.24
Barisal	3928	2021	1907	1099	1037	29	27.15	51.31	1.53
Jessore	3327	1711	1616	865	847	18	26.02	49.51	1.13
Khulna	3557	1854	1703	1009	976	33	28.38	52.66	1.95
Kushtia	1884	971	913	505	493	12	26.83	50.81	1.31
Patuakhali	1499	763	736	415	399	16	27.67	52.28	2.15
Bogra	2230	1136	1094	621	598	23	27.86	52.69	2.11
Dinajpur	2570	1334	1236	784	725	59	30.49	54.38	4.74
Pabna	2815	1453	1362	772	748	24	27.44	51.49	1.78
Rajshahi	4269	2176	2093	1169	1106	63	27.39	50.85	3.00
Rangpur	5447	2810	2637	1577	1517	60	28.95	53.99	2.26
Bangladesh	71477	37069	34408	20521	19649	872	28.71	53.00	2.53

Source: Government of Bangladesh (1977), Bangladesh Population Census Report 1974: National Volume (Dacca: Bureau of Statistics): Table 4, 73-92; and Table 14, 347-370.

APPENDIX V Sectoral Distribution of the Labour Force in Some Selected Developed Countries During the Nineteenth and Twentieth Centuries

Country	Year	Agriculture	Industry	Service
U.S.A.	1820	72.3	12.4	15.3
	1830	70.8	13.6	15.6
	1840	68.8	15.0	16.2
	1850	64.8	17.6	17.6
	1860	60.2	19.9	19.9
	1870	53.8	22.6	23.6
	1880	49.4	25.5	25.1
	1890	42.6	27.3	30.1
	1900	37.4	29.0	33.6
	1910	31.9	31.0	37.1
	1920	26.7	33.2	40.1
	1930	22.5	33.7	43.8
Canada	1891	48.3	28.4	23.3
	1901	42.4	30.9	26.7
	1911	37.2	32.8	30.0
	1921	35.1	29.2	35.7
	1931	31.2	29.9	38.9
U.K.	1881	11.3	43.9	44.8
	1891	10.2	43.8	46.0
	1901	8.4	46.3	45.3
	1911	8.0	46.0	46.0
	1921	7.1	47.6	45.3
	1931	6.4	43.9	49.7
France	1866	45.7	40.2	14.1
	1881	44.3	37.4	18.3
	1901	35.4	45.4	19.2
	1911	33.0	46.6	20.4
	1921	30.7	48.0	21.3
	1931	24.5	40.0	35.5

Source: Clark, C. (1957), The Conditions of Economic Progress (London: McMillan): 176-219.

APPENDIX VI Sectoral Distribution of the Labour Force (Employed) by District and Sex, Bangladesh, 1974 ('000)

District	Total Labour Force			Agriculture			Industry			Service		
	Both Sexes	Male	Female	Both Sexes	Male	Female	Both Sexes	Male	Female	Both Sexes	Male	Female
Chittagong	1244	1191	53	728	699	29	85	83	2	431	409	22
Chittagong-Hill Tracts	221	165	57	190	135	55	7	7	-	24	22	2
Comilla	1601	1496	105	1331	1238	93	70	67	3	199	191	8
Noakhali	802	779	22	643	626	17	32	31	1	127	122	5
Sylhet	1429	1358	71	1232	1176	56	19	18	1	177	163	14
Dacca	2238	2141	96	1156	1114	43	300	294	6	781	733	48
Faridpur	1107	1081	26	964	945	19	30	29	1	112	107	5
Mymensingh	2209	2135	74	1963	1905	58	33	32	1	214	199	15
Tangail	546	534	12	464	457	7	34	32	2	49	45	4
Barisal	1039	1013	26	813	797	16	42	40	2	184	176	8
Jessore	851	833	18	720	708	12	27	26	1	104	99	5
Khulna	979	948	31	678	662	16	91	89	2	210	198	12
Kushtia	498	486	12	391	387	4	28	27	1	78	73	5
Patuakhali	407	392	15	354	346	8	8	8	-	45	38	7
Bogra	609	588	21	543	526	17	13	12	1	54	50	4
Dinajpur	776	718	58	692	640	52	27	23	4	58	54	4
Pabna	757	734	23	567	557	10	79	72	7	111	105	6
Rajshahi	1155	1094	61	1002	950	52	34	33	1	119	111	8
Rangpur	1548	1490	58	1392	1347	45	29	27	2	127	116	11
Bangladesh	20018	19177	840	15823	15213	610	988	951	37	3207	3031	176

Source: Government of Bangladesh (1977), Bangladesh Population Census Report 1974: National Volume (Dacca: Bureau of Statistics): Table 16, 443-514.

APPENDIX VII Sectoral Distribution of the Labour Force (Employed) by District and Rural-Urban Residence, Bangladesh, 1974 ('000)

District	All Areas				Rural				Urban			
	Total Labour Force	Agri-culture	Industry	Service	Total Labour Force	Agri-culture	Industry	Service	Total Labour Force	Agri-culture	Industry	Service
Chittagong	1244	728	85	431	938	684	35	219	306	43	50	213
Chittagong-Hill Tracts	221	190	7	24	200	184	2	13	21	6	5	10
Comilla	1600	1331	70	199	1534	1317	64	153	67	14	6	47
Noakhali	802	643	32	127	780	641	29	110	22	2	3	17
Sylhet	1428	1232	19	177	1392	1224	16	152	36	8	3	25
Dacca	2238	1157	300	781	1476	1095	138	243	762	62	162	538
Faridpur	1106	964	30	112	1077	957	26	94	30	8	4	18
Mymensingh	2210	1963	33	214	2097	1934	22	141	112	29	10	73
Tangail	546	464	34	48	518	454	30	34	28	9	4	15
Barisal	1039	813	42	184	1000	808	39	153	39	5	3	31
Jessore	851	720	27	104	804	705	25	74	47	14	3	30
Khulna	979	678	91	210	819	663	53	103	159	15	38	106
Kushtia	497	391	28	78	458	382	24	52	39	9	4	30
Patuakhali	407	354	8	45	397	352	8	37	11	2	-	9
Bogra	610	543	13	54	589	540	11	38	21	2	2	17
Dinajpur	776	692	26	58	746	686	24	36	30	6	3	21
Pabna	757	567	79	111	704	558	67	79	53	9	12	32
Rajshahi	1155	1002	34	119	1096	989	27	80	59	13	6	40
Rangpur	1548	1392	29	127	1486	1375	25	86	63	17	4	42
Bangladesh	20018	15823	988	3207	18113	15550	665	1898	1905	273	323	1309

Source: Government of Bangladesh (1977), Bangladesh Population Census Report 1974: National Volume (Dacca: Buraeu of Statistics): Table 16, 443-514.

APPENDIX VIII Labour Force (Employed) by Major Occupational Groups, Bangladesh, 1974 ('000)

District	Total Labour Force	Professional and Technical	Administrative and Management	Clerical	Sales	Service	Agriculture	Production and Transport
Chittagong	1245	31	4	26	112	48	727	298
Chittagong-Hill Tracts	221	3	-	2	6	4	190	17
Comilla	1601	31	2	13	55	18	1331	151
Noakhali	802	17	-	9	38	13	644	81
Sylhet	1429	25	1	9	54	17	1238	85
Dacca	2238	58	14	57	212	101	1162	633
Faridpur	1107	16	-	7	42	11	962	68
Mymensingh	2210	32	2	15	73	35	1963	90
Tangail	547	9	-	4	13	7	464	50
Barisal	1039	23	1	9	58	13	815	120
Jessore	851	17	-	6	38	10	720	60
Khulna	979	21	2	14	69	25	678	171
Kushtia	498	10	-	7	23	9	392	56
Patuakhali	407	7	-	2	12	3	354	28
Bogra	609	11	--	4	14	11	542	27
Dinajpur	776	11	1	5	15	10	692	42
Pabna	757	13	1	5	37	11	566	125
Rajshahi	1155	19	1	8	34	16	1004	73
Rangpur	1549	21	1	9	28	25	1394	71
Bangladesh	20020	375	31	208	934	386	15838	2247

Source: Government of Bangladesh (1977), Bangladesh Population Census Report 1974: National Volume (Dacca: Bureau of Statistics): Table 15, 371-442.

APPENDIX IX Variation of the Labour Force by District and Sex, Bangladesh, 1961-1974 (Percentage Change)

District	Labour Force, 1961 ('000)			Labour Force, 1974 ('000)			Percentage Change, 1961-1974		
	Both Sexes	Male	Female	Both Sexes	Male	Female	Both Sexes	Male	Female
Chittagong	1127	882	245	1320	1264	56	17.13	43.35	-77.14
Chittagong-Hill Tracts	215	134	81	224	167	57	3.85	23.91	-29.50
Comilla	2043	1226	817	1660	1552	108	-18.79	26.55	-86.83
Noakhali	885	628	257	848	825	23	-4.13	31.40	-90.91
Sylhet	1302	1028	274	1456	1381	75	11.84	34.36	-72.59
Dacca	1507	1446	60	2311	2210	101	53.35	52.79	66.87
Faridpur	931	912	19	1124	1097	27	20.73	20.33	39.82
Mymensingh	2254	1776	479	2238	2162	76	-.72	21.77	-84.13
Tangail	458	361	97	558	545	12	21.77	51.13	-87.18
Barisal	869	854	15	1066	1037	29	22.78	21.46	99.64
Jessore	664	637	27	866	847	18	30.23	32.98	-32.91
Khulna	758	735	23	1010	976	33	33.16	32.75	46.40
Kushtia	365	349	16	505	493	12	38.32	41.34	-26.51
Patuakhali	344	338	6	415	399	16	20.55	17.93	174.10
Bogra	466	457	10	621	598	23	33.24	31.04	135.80
Dinajpur	594	545	49	784	725	59	32.05	33.14	20.38
Pabna	553	543	10	772	748	24	39.71	37.80	144.59
Rajshahi	850	818	31	1169	1106	63	37.59	35.18	100.51
Rangpur	1258	1133	124	1577	1517	60	25.37	33.87	-52.09
Bangladesh	17443	14802	2640	20523	19651	872	22.00	32.79	9.91

Sources: Government of Pakistan (1961), Census of Pakistan: Population 1961 (Karachi: Ministry of Home and Kashmir Affairs): Vol.2, East Pakistan: Table 41, V-22-27;

Government of Bangladesh (1977), Bangladesh Population Census Report 1974: National Volume (Dacca: Bureau of Statistics) Table 14, 347-370.

APPENDIX X Distribution of Some Selected Socio-Economic Variables by District, Bangladesh, 1961-1974

District	Rate of Change of the Total Labour Force, 1961-1974	Rate of Net-Migration, 1961-1974	Rate of Urbanization, 1961-1974	Rate of Growth in Literacy, 1961-1974	Rate of Change of the Population, 1961-1974	Man-land Ratio, 1974	Per Capita Rice Production, 1974 (Pounds)	Location Quotient in the Manufacturing, 1974
Chittagong	30.6	2.1	172.7	240.1	44.7	4.0	302.1	0.7
Chittagong-Hill Tracts	44.0	10.4	139.1	164.0	32.0	2.6	264.9	0.9
Comilla	28.6	-6.2	89.3	206.5	32.6	4.0	275.7	1.1
Noakhali	26.2	-8.1	117.6	221.6	35.7	3.3	355.7	0.9
Sylhet	30.6	2.8	92.2	181.0	36.4	2.4	426.2	0.4
Dacca	30.4	7.6	243.0	251.7	49.4	3.9	174.1	1.2
Faridpur	27.7	-6.2	57.0	179.6	27.7	3.1	230.9	0.9
Mymensingh	29.6	-1.5	107.8	147.9	36.8	2.8	414.5	0.5
Tangail	26.8	-4.7	383.3	167.5	39.8	3.2	300.7	1.8
Barisal	27.1	-.4	53.3	270.4	28.0	3.2	374.7	0.8
Jessore	26.0	1.2	156.0	210.5	51.9	2.5	261.9	0.9
Khulna	28.4	6.4	254.7	272.1	45.3	2.8	192.8	1.3
Kushtia	26.8	1.0	163.5	154.5	61.5	2.3	184.2	1.1
Patuakhali	27.7	-12.3	233.3	247.9	25.6	2.1	499.6	0.7
Bogra	27.9	-.7	87.0	206.4	41.7	2.9	384.4	0.8
Dinajpur	30.5	5.2	68.0	205.1	50.3	2.0	369.3	1.4
Pabna	27.4	-3.5	128.0	147.7	43.7	2.7	218.0	1.8
Rajshahi	27.4	1.4	119.2	181.6	51.9	2.3	330.1	0.9
Rangpur	29.0	1.1	75.5	153.7	43.5	3.0	375.0	0.8

Sources: Calculated from: Government of Pakistan (1961), Census of Pakistan: Population 1961 (Karachi: Ministry of Home and Kashmir Affairs): Vol.2, East Pakistan; and

Government of Bangladesh (1977), Bangladesh Population Census Report 1974: National Volume (Dacca: Bureau of Statistics).

APPENDIX XI Sectoral Distribution of the Labour Force (Employed) by District and Percentage Change During 1961-1974, Bangladesh

District	Labour Force, 1961 ('000)			Labour Force, 1974 ('000)			Percentage Change, 1961-1974		
	Agriculture	Industry	Service	Agriculture	Industry	Service	Agriculture	Industry	Service
Chittagong	770	136	210	728	85	431	-5.57	-37.21	104.94
Chittagong-Hill Tracts	191	11	14	190	7	24	-.41	-34.09	77.45
Comilla	1990	47	78	1331	70	199	-33.10	49.62	154.80
Noakhali	804	30	48	643	32	127	-20.05	8.41	167.65
Sylhet	1182	38	77	1232	19	177	4.27	-50.00	131.63
Dacca	960	248	289	1157	300	781	20.55	20.68	170.33
Faridpur	827	36	67	964	30	112	16.67	-16.11	67.59
Mymensingh	2086	69	120	1963	33	214	-5.91	-52.81	78.40
Tangail	408	12	23	464	34	48	13.76	194.76	106.53
Barisal	784	31	69	813	42	184	3.65	33.06	166.58
Jessore	565	39	58	720	27	104	27.30	-30.23	79.55
Khulna	607	61	86	678	91	210	11.74	49.31	143.42
Kushtia	285	40	38	391	28	78	37.47	-29.84	105.19
Patuakhali	287	12	25	354	8	45	23.35	-20.74	76.58
Bogra	419	19	28	543	13	54	29.41	-32.60	73.29
Dinajpur	540	18	35	692	26	58	28.02	49.60	67.98
Pabna	452	54	45	567	79	111	25.38	47.14	143.91
Rajshahi	758	37	54	1002	34	119	32.15	-7.43	122.05
Rangpur	1165	26	65	1392	29	127	19.46	12.51	95.83
Bangladesh	15080	953	1429	15823	988	3207	12.00	7.68	113.35

Sources: Government of Pakistan (1961), Census of Pakistan: Non-Agricultural Labour Force 1961 (Karachi: Ministry of Home and Kashmir Affairs) : Vol.5, East Pakistan : Tables 2,3, and 4; 16-17; 18-179; and 180-205; and

Government of Bangladesh (1977), Bangladesh Population Census Report 1974: National Volume (Dacca: Bureau of Statistics): Table 16, 443-514.

APPENDIX XII Methods of Describing the Rates of Growth of Population or Labour Force:

The necessity to describe the change that has taken place over more than one period (involving three or more dates on which the population or any other component has been measured), or the need to describe the course of chnage within a given period, leads to simplification and generalization of a series of successive changes through the average change within a period. The average annual rates of growth express relative growth or chnage in population or a component of population, conventionally expressed as a percentage per year.

Arithmetic approximation to rate of change is based on the assumption that the size of a given population changes by a constant yearly rate. The equation for computing the average annual rate of change by arithmetic progression is as follows:

$$r_a = \frac{P_2 - P_1}{P_1 \cdot n} \times 100$$

where, r_a = arithmetic rate of change

P_1 = initial population or labour force

P_2 = terminal population or labour force

n = time over which the change took place (number of years)

Geometric change is a compound interest type of change in which the compounding takes place at certain constant intervals, such as a year. The geometric rate of change is defined by:

$$P_2 = P_1 (1 + r_g)^n$$

where, r_g = geometric rate of change

P_1 = initial population or labour force

P_2 = terminal population or labour force

n = time over which the change took place (number of years)

The exponential rate of change is also a compounding interest type of change in which the compounding takes place continuously -- a constant rate of change is applied continuously over time. The exponetial growth curve can be expressed as follows:

$$P_2 = P_1 e^{r_e n}$$

$$e = (2.71828)$$

Solving for r_e, we get

$$r_e = \frac{\log \left(\frac{P_2}{P_1}\right)}{n \log e}$$

where, r_e = exponential rate of change

P_1 = initial population or labour force

P_2 = terminal population or labour force

n = time over which the change took place (number of years)

For further details, see Shryock et al. (1973): Vol. 2, 377-80.

REFERENCES

Ackerman, E.A. (1959), 'Geography and Demography,' in Hauser and Duncan (eds.), The Study of Population (Chicago: The University of Chicago Press): 717-27.

Ahmed, B. (1976), 'The 1973-74 Census of Housing and Population,' in L.J. Cho et al. (eds.), Introduction to Censuses of Asia and the Pacific 1970-74 (Hawaii: East-West Population Institute): 23-39.

Ahmed, N. (1968), An Economic Geography of East Pakistan (London: Oxford University Press).

Akhtar, S.M. (1965), 'The Problem of Regional Disparities in Economic Development with Special Reference to East Pakistan,' in A.I. Qureshi (ed.) The Third Five Year Plan and Other Papers (Karachi: Pakistan Economic Association): 201-8.

Alamgir, M. (1978), Bangladesh: A Case of Below Poverty Level Equilibrium Trap (Dacca: The Bangladesh Institute of Development Studies).

Ali, A.M.S. (1980), 'Part-time Farming in Bangladesh,' Labour, Capital and Society, 13(2): 23-38.

Amin, S. (1972), 'Underdevelopment and Dependence in Black Africa - Origins and Contemporary Forms,' The Journal of Modern African Studies, 10(4): 503-24.

____ (1974), Accumulation on a World Scale: A Critique of the Theory of Underdevelopment, 2 Vols. (New York: Monthly Review Press).

Appalraju, J. and Safier, M. (1976), 'Growth-Center Strategies in Less-Developed Countries,' in A. Gilbert (ed.) Development Planning and Spatial Structure (London: John Wiley): 143-167.

Arizpe, L. (1977), 'Women in the Informal Labor Sector: The Case Mexico City,' in The Wellesely Editorial Committee (eds.) Women and National Development: The Complexities of Change (Chicago and London: The University of Chicago Press): 25-37.

Arthur, W.B. and McNicoll, G. (1978), 'An Analytical Survey of Population and Development in Bangladesh,' Population and Development Review, 4(1): 23-80.

Bairoch, P. and Limbor, J.M. (1968), 'Changes in the International Distribution of the World Labour Force by Region, 1880-1960,' International Labour Review, 98(4): 311-29.

Baran, P. (1957), The Political Economy of Growth (New York: Monthly Review Press).

Baran, P. and Hobsbawm, E.J. (1961), 'The Stages of Economic Growth,' Kyklos, 14: 324-42.

Bean, L.L. (1968), 'Utilization of Human Resources: The Case Women in Pakistan,' International Labour Review, 94(4): 391-405.

Bean, L.L. and Farooq, D.M. and Khan, M.R. (1966), 'The Labour Force of Pakistan: A Note on 1961 Census,' The Pakistan Development Review, 6(4): 587-90.

Bertocci, P.J. (1976), 'Rural Development of Bangladesh,' in R.D. Stevens et al. (eds.) Rural Development in Bangladesh and Pakistan (Honolulu: University Press of Hawii): 3-8.

Blaire, H.W. (1978), 'Rural Development, Class Structure and Bureaucracy in Bangladesh,' World Development, 6(1): 65-82.

Bose, S.R. (1963), 'Labour Force and Employment in Pakistan, 1961-86: A Preliminary Analysis,' Pakistan Development Review, 3(3): 371-98.

Boudeville, J.R. (1966), Problems of Regional Economic Planning (Edinburgh: Edinburgh University Press).

Cain, M.T. (1977), 'Economic Activities of Children in a Village in Bangladesh,' Population and Development Review, 3: 201-27.

Cairncross, A.K. (1961), 'Essays in Bibliography and Criticism, XLV: The Stages of Economic Growth,' Economic History Review, (Second Series) 13(3): 450-58.

Centre for Urban Studies (CUS) (1976), Squatters in Bangladesh Cities: A Survey of Urban Squatters in Dacca, Chittagong and Khulna 1974 (Dacca: Urban Development Directorate).

Chilcote, R.H. (1974), 'Dependency: A Critical Synthesis of the Literature,' Latin American Perspective, 1: 4-29.

Chougill, C.L. (1981), Migration, Population Growth and Emerging Urban Structure in Bangladesh (London: School of Oriental and African Studies).

Choudhury, R.H. (1978), 'Determinants and Consequences of Rural out Migration: Evidence from Some Villages in Bangladesh,' Paper presented at the IUSSP Conference on Economic and Demographic Change: Issues for the 1980s (Helsinki: IUSSP).

Choudhury, R.H. and Ahmed, N.A. (1980), Female Status in Bangladesh (Dacca: The Bangladesh Institute of Development Studies).

Chowdhury, M.I. (1977), Optimization of Benefits from the Haors of Sylhet and Mymensingh: An Analysis of LANDSAT Data (Dacca: Department of Geography, Jahangirnagar University).

Christaller, W. (1966), Central Places in Southern Germany (Translated by C.W. Baskin) (Englewood Cliffs, New Jersey: Prentice-Hall).

Clark, C. (1940), The Conditions of Economic Progress (London: McMillan).

____ (1957), The Conditions of Economic Progress (Second Edition) (London: McMillan).

Clarke, J.I. (1965), Population Geography (London: Pergamon Press).

Dacca University Socio-Economic Survey (1958), Rural Credit and Unemployment in East Pakistan (Dacca: Bureau of Economic Research).

Denti, E. (1968), 'Age-Sex Patterns of Labour Force Participation by Urban and Rural Populations,' International Labour Review, 98(6): 525-50.

Dewan, A.K. (1978), An Analysis of the Green Revolution, M.A. thesis (unpublished), (Winnipeg: University of Manitoba, Department of Anthropology).

Drummond, I. (1961), 'Review of "the Stages of Economic Growth" by W.W. Rostow,' Canadian Journal of Economics and Political Science, 27(1): 112-3.

Ducoff, L.J. (1960), Human Resources of Central America, Panama and Mexico, 1950-1980, in Relation to Some Aspects of Economic Development (Santiago: United Nations Economic Commission for Latin America).

du Guerney, J. (1978), Migration and Rural Development: Selected Topics for Teaching and Research (Rome: Food and Agriculture Organization of the United Nations).

Elahi, K.M. (1971), Patterns of Population Structure and Growth in East Pakistan, Ph.D. Dissertation (unpublished), (Durham: Durham University).

Elahi, K.M. and Chowdhury, A.H. (1976), 'Spatial Analysis of Population Variations in Bangladesh, 1951-61,' Paper presented at the Second Bangladesh National Geographical Conference, (Rajshahi: Bangladesh National Geographical Association, Rajshahi University).

Eldridge, T.H. and Thomas, D.S. (1964), 'Population Redistribution and Economic Growth, United States-3,' Demographic Analysis and Interrelations (Memio.) (Philadelphia): 1-16.

Enke, S. (1963), Economics for Development (Englewood Cliffs, New Jersey: Prentice-Hall).

Faaland, J. and Parkinson, J.R. (1976), Bangladesh: The Test Case for Development (London: Hurst).

Farooq, G.M. (1968), 'Labour Force Participation Rates in Pakistan, 1901-1961,' The Pakistan Development Review, 8(1): 74-95.

Farouk, A. and Ali, M. (1977), The Hardworking Poor (Dacca: Bureau of Economic Research).

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

Foster-Carter, A. (1974), 'Neo-Marxist Approaches to Development and Underdevelopment,' in E.D. Kadt and G. Williams (eds.) Sociology and Development (London: Tavistock: 67-105.

Frank, A.G. (1966), 'The Development of Underdevelopment,' Monthly Review, 18(4): 17-31.

___ (1972), Sociology of Underdevelopment and Underdevelopment of Sociology (London: Pluto Press).

Friedlander, S. (1965), Labor, Migration and Economic Growth: A Study of Puerto-Rico (Cambridge, Mass.: MIT Press).

Friedmann, J. (1966), Regional Development Policy: A Case of Venezuela (Cambridge, Mass.: MIT Press).

___ (1968), 'The Strategy of Deliberate Urbanization,' Journal of the American Institute of Planners, 34: 364-373.

___ (1972), 'A General Theory of Polarized Development,' in N. Hansen (ed.) Growth Centers in Regional Economic Development (New York: Free Press): 82-107.

Goldsmith, R.W. (1959), Explanatory Report: The Comparative Study of Economic Growth and Structure, Part I (New York: National Bureau of Economic Research): 3-100.

Government of Bangladesh (1973), The First Five Year Plan 1973-78 (Dacca: Planning Commission).

___ (1975), Census of Population: Bulletin No. 2 (Dacca: Census Commission).

___ (1977), Bangladesh Population Census Report 1974: National Volume (Dacca: Bureau of Statistics).

___ (1977), Report on the 1974 Bangladesh Retrospective Survey of Fertility and Mortality (London: Ministry of Overseas Development; and Dacca: Census Commission).

___ (1979), Statistical Yearbook 1979 (Dacca: Bureau of Statistics).

___ (1979b), Statistical Pocket Book of Bangladesh (Dacca: Ministry of Planning).

Government of India (1901), Census of India, 1901: The Lower Provinces and their Feudatories, Part 2 (Calcutta: Imperial Tables) Vol. 6-4.

___ (1901b), Census of India, 1901: Assam, Part 1 (Calcutta): Vol. 6-A.

___ (1913), Census of India, 1911: Bengal, Part 2 (Calcutta): Vol. 5.

___ (1912), Census of India, 1911: Assam, Part 2 (Shillong): Vol. 3.

___ (1923), Census of India, 1921: Bengal, Part 2 (Calcutta): Vol. 5.

___ (1923b), Census of India, 1921: Assam, Part 2 (Shillong): Vol. 6.A.

___ (1933), Census of India, 1931: Bengal and Sikkim, Part 2 (Calcutta): Vol. 5.

___ (1933), Census of India, 1931: Assam, Part 2 (Calcutta): Vol. 3.

Government of Pakistan (1955), Census of Pakistan 1951: East Bengal (Karachi: Ministry of Home and Kashmir Affairs) Vol. 3.

___ (1961), Census of Pakistan, 1961: East Pakistan (Karachi: Ministry of Home and Kashmir Affairs) Vol. 2, (Population).

___ (1961b), Census of Pakistan, 1961: East Pakistan (Karachi: Ministry of Home and Kashmir Affairs) Vol. 5, (Non-Agricultural Labour Force).

___ (1970), Reports of the Advisory Panels for the Fourth Five Year Plan (ISlamabad: Planning Commission) Vol. 1.

Gras, N.B.S. (1930), 'Stages of Economic History,' Journal of Economic and Business History, 2: 397.

Habibullah, M. (1962), The Pattern of Agricultural Unemployment: A Case of an East Pakistan Village (Dacca: Bureau of Economic Research).

Hagen, E.E. (1962), On the Theory of Social Change: How Economic Growth Begins (Cambridge, Mass,: MIT, Dorsey Press).

Hammond, R. and McCullagh, P.S. (1975), Quantitative Techniques in Geography (Oxford: Clarendon Press).

Haque, C.E. (1977), Spatial Structure of the Labour Force in Bangladesh, M.A. Thesis (unpublished) (Dacca: Jahangirnagar University, Department of Geography).

___ (1981), 'Economically Active Population in Bangladesh: A Spatio-temporal Analysis,' Paper presented at the XV Bengal Studies Conference, (Illinois).

Harrod, R.F. (1939), 'An Essay in Dynamic Theory,' Economic Journal, 49: 14-33.

Hasnath, S.A. (1974), 'Growing Urban Centre in Bangladesh,' in A.F.M. Kamaluddin (ed.) Studies in Bangladesh (Dacca: Bangladesh National Geographical Association): 81-87.

Hirschman, A.O. (1961), The Strategy of Economic Development (New Haven: Yale University Press).

Hoselitz, B.F. (1960), Theories of Economic Growth (Glencoe, Illinois: Free Press).

Huq, A.F.M.H. (1978), 'Labour Force Analysis: Bangladesh 1974,' Bangladesh Development Studies, 6(2): 163-90.

Integrated Rural Development Program (IRDP) (1977), Bangladesh Rural Development I Project: Bench Mark Survey (Mymensingh: IRDP).

International Bank for Reconstruction and Development (IBRD) and the World Bank (1980), World Development Report 1980 (Washington, DC: The World Bank).

International Labour Office (1962), 'Unemployment and Underemployment in India, Indonesia, Pakistan and the Philippines,' International Labour Review, 86: 369-87.

___ (1977), Labour Force Estimates and Projections, 1950-2000 (Geneva: ILO): Vol. 6.

___ (1980), The Yearbook of Labour Statistics (Geneva: ILO).

___ (1981), The Yearbook of Labour Statistics (Geneva: ILO).

Isard, W. (1960), Methods of Regional Analysis (Cambridge, Mass.: MIT Press).

Islam, M. (1974), 'Activity Rate Analysys in the Context of Rural Bangladesh,' Rural Demography, 1(1): 55-63.

Islam, N. (1964), 'Concept and Measurement of Unemployment and Underemployment in Developing Economics,' International Labour Review, 89: 240-56.

___ (1978), Development Strategy of Bangladesh (Oxford: Pergamon Press).

Husband, D.D. (1971), 'National Versus Regional Growth: Some Issues,' Canadian Public Administration, 14: 538-55.

Jahan, R. (1975), 'Women in Bangladesh,' in Women for Women Research and Study Group (eds.) Women for Women (Dacca: University Press).

Jaffe, A.J. and Stewart, C.D. (1951), Manpower Resources and Utilization (New York: John Wiley).

Kamaluddin, A.F.M. (1974), 'Sea Ports in Bangladesh,' in A.F.M. Kamaluddin (ed.) Studies in Bangladesh, (Dacca: Bangladesh National Geographical Association): 95-99.

Kamerschen, D.R. (1955), 'On an Operational Index of Over-Population,' Economic Development and Cultural Change, 13(2): 169-87.

Keeble, D.E. (1967), 'Models of Economic Development,' in R.J. Chorley and P. Haggett (eds.) Models in Geography (London: Mathuen): 243-87.

Khan, A.R. et al. (1975), A Preliminary Bibliography of Demographic and Family Planning Literature on Bangladesh (Dacca: John Hopkins Fertility Research Project): FRP No. 3.

Khan, M. (1977), Land Reform in Bangladesh: A Theoretical and Empirical Analysis (unpublished manuscript) (Dacca: University of Dacca, Department of Economics).

Khuda, B.E. (1979), 'Measurement of the Economically Active Population - An Alternative Approach,' Bangladesh Development Studies, 7(4): 87-95.

Kocher, J.E. (1973), Rural Development, Income Distribution and Fertility Decline (New York: The Population Council).

Kuznets, S. (1957), 'Quantitative Aspects of the Economic Growth of Nations: II, Industrial Distribution of National Product and the Labor Force,' Economic Development and Cultural Change, 5(4): (supplement).

___ (1959), Six Lectures on Economic Growth (Glencoe, Illinois: Free Press).

Laclau, E. (1971), 'Capitalism and Feudalism in Latin America,' New Left Review, 67: 19-38.

Lamb, H.B. (1955), 'The "State" and Economic Development in India,' in S. Kuznets et al. (eds.) Economic Growth: Brazil, India, Japan (Durham: Duke University Press): 464-95.

Lasker, S.I. and Khuda, B.E. (1979), Factors of Labour Force Participation in Bangladesh (unpublished manuscript) (Dacca: Bangladesh Institute of Development Studies).

Luke, H.S. (1955), The Old Turkey and the New: From Byzantium to Ankara (London: Geoffrey Bles.).

Mayer, J. (1977), 'Space, Employment and Development: Some Thoughts on the Regional Dimension of Employment Policy,' International Labour Review, 115(1): 79-95.

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 Economies and Diseconomies in a Competitive Situation,' Economic Journal, 62: 54-97.

Meier, G.M. and Baldwin, R.E. (1957), Economic Development: Theory, History, Policy (New York: Wiley).

Miracle, M.P. and Berry, S.S. (1970), 'Migrant Labor and Economic Development,' Oxford Economic Papers, 22(1): 86-108.

Muñoz, H. et al. (1979), 'Internal Migration to Mexico City and Its Impact Upon the City's Labor Market,' in F. Camara and R.V. Kemper (eds.) Migration Across Frontiers: Mexico and the United States (Albany, New York: State University of New York): 35-64.

Myint, H. (1964), The Economics of the Developing Countries (London: Hutchinson).

Myrdal, G. (1944), An American Dilemma (New York: Harper and Row).

___ (1956), An International Economy: Problems and Prospects (New York: Harper and Row).

___ (1957), Economic Theory and Underdeveloped Regions (London: Duckworth).

___ (1963), Challenge to Affluence (New York: Pantheon).

___ (1968), Asian Drama: An Inquiry Into the Poverty of Nations, Vol. I (New York: Pantheon).

National Foundation for Research on Human Resource Development (1979), Export of Manpower From Bangladesh to the Middle East Countries: The Impact of Remittance Money on Household Expenditure (Dacca: NFRHRD).

North, D.C. (1958), 'A Note on Professor Rostow's "Take-Off" Into Self-Sustained Economic Growth,' Manchester School of Economic and Social Studies, 26(1): 68-75.

Ohlin, G. (1961), 'Reflections on the Rostow Doctrine,' Economic Development and Cultural Change, 9(4) Part I: 648-55.

Overbeek, J. (1980), Population and Canadian Society (Toronto: Butterworths).

Paauw, D.S. (1961), 'Some Frontiers of Empirical Research in Economic Development,' Economic Development and Cultural Change, 9(2): 180-99.

Papanek, H. (1977), 'Development Planning for Women,' in The Wellesly Editorial Committee (eds.) Women and National Development: The Complexities of Change (Chicago and London: The University of Chicago Press): 14-21.

Parroux, F. (1964), 'Note Sur La Notion de Pole de Croissance,' Economie Appliquee, 8: 307-20.

Phelps-Brown, E.H. (1962), The Economics of Labor (New Haven and London: Yale University Press).

Pollard, A.H.; Yusuf, F. and Pollard, G.N. (1974), Demographic Techniques (Rushcutters Bay: Pergamon Press Australia).

Population Reference Bureau, Inc. (1980) World Population Data Sheet 1980 (Washington, D.C.).

Porters, A. (1976), 'On the Sociology of National Development: Theories and Issues,' American Journal of Sociology, 82: 55-85.

Pressat, R. (1961), 'Projections of the Active Population by Department,' Population (Paris), 16(3): 401-26.

Qadir, S.R. (1975), Bastees of Dacca: A Study of Squatter Settlements (Dacca: Local Government Institute).

Rahman, G. (1974), 'Rural Settlement in Bangladesh,' in A.F.M. Kamaluddin (ed.) Studies in Bangladesh (Dacca: Bangladesh National Geographical Association): 88-94.

Rahman, R.I. (1978), 'Measurement of Rural Unemployment: A Disaggregative Approach,' Bangladesh Development Studies, 6(1): 101-9.

Rashid, H.E. (1977), Geography of Bangladesh (Dacca: University Press).

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

Sadie, J.L. (1966), 'A Statement of Demographic Aspects of Labor Supply and Employment,' in Summary Report, Vol. I, World Population Conference, 1965 (New York: United Nations).

Seers, D. (1969), The Meaning of Development, Communication Series No. 44 (Sussex: Institute of Development Studies).

Sharif, R. (1978), Formation of Economic Regions in Bangladesh, M.A. Thesis (unpublished), (Dacca: Jahangirnagar University, Department of Geography).

Shryorck, H.S. et al. (1973) The Methods and Materials of Demography, Vol. 2 (Washington, DC: Bureau of Census).

Sinha, J.N. (1965), 'Dynamics of Female Participation in Economic Activity in a Developing Country,' Paper presented in the World Population Conference, 1965 (Belgrade).

Smith, D.M. (1973), The Geography of Social Well-being in the U.S.A. (New York: McGraw-Hill).

Soja, E.W. and Tobin, R.J. (1975), 'The Geography of Modernization: Paths, Patterns, and Processes of Spatial Change in Developing Countries,' in G.D. Brewer and R. Brunner (eds.) Political Development and Change: A Policy Approach (New York: MacMillan): 197-208.

Stavenhagen, R. (1964), Development and Underdevelopment (Berkeley: University of California Press).

Stuckey, B. (1975), 'Spatial Analysis and Economic Development,' Development and Change, 6(1): 89-106.

Trewartha, G.T. (1953), 'A Case for Population Geography,' Annals of the Association of American Geographers, 43(2): 71-97.

Ullman, E.L. (1958), 'Regional Development and the Geography of Concentration,' Paper and Proceedings of the Regional Science Association, 4: 179-98.

United Nations (1951), Application of International Standards to Census Data on the Economically Active Population (New York).

___ (1962), Some Aspects of Population Growth in Colombia (Santiago: Economic Commission for Latin America).

___ (1967), Principles and Recommendations for the 1970 Population Censuses, Statistical Paper Series, No. 44 (New York).

___ (1968), Methods of Analysing Census Data on Economic Activities of the Population, Population Studies, No. 43 (New York: Department of Economic and Social Affairs).

___ (1975), Statistical Yearbook 1975 (New York).

United Nations and the Government of the Philippines (1960), Population Growth and Manpower in the Philippines: A Joint Study by the United Nations and the Government of the Philippines, Population Studies, No. 32 (New York).

U.S. Agency for International Development (1975), Demographic Techniques for Manpower Planning in Developing Countries (Washington, DC, Department of State).

U.S. Department of Labor (1966), 'Labor Force Projections by State, 1970 and 1980,' (Prepared by D.F. Johnston and G.R. Methee), Monthly Labor Review, 89(10): 1089-104.

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

Wiest, R.E. (1979), 'Anthropological Perspective on Return Migration: A Critical Commentary,' Papers in Anthropology, 20(1): 167-87.

Williamson, J.W. (1965), 'Regional Inequality and the Process of National Development: A Description of the Patterns,' Economic Development and Cultural Change, 113(4), Part II: 1-10.

Zacharia, K.C. (1964), A Historical Study of Internal Migration in the Indian Subcontinent, 1901-31 (London: Asia Publishing House).

Zelinsky, W. (1966), A Prologue to Population Geography (Englewood Cliffs, New Jersey: Prentice-Hall.