

**DIMENSIONS AND STRUCTURE OF
LABOUR FORCE IN RELATION TO
ECONOMIC DEVELOPMENT**

**A COMPARATIVE STUDY OF
PAKISTAN AND BANGLADESH**

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To my parents

percent and the proportion of the labour force in non-agricultural occupation increased by 6 percentage points.

Finally, in chapter 6 the author discusses important policy implications of his analysis. Four areas may be cited: (i) the rapidly increasing number of persons of working age in each country as a result of high fertility levels has particular policy implications for programmes aimed at reducing population growth; (ii) with female labour force participation rates in both Pakistan and Bangladesh among the lowest in the world, policies supportive of increased female employment would appear to merit priority consideration; (iii) policies aimed at reducing the younger male activity rates through greater emphasis on education for both sexes would appear to be especially important for longer-range improvements in the quality of the labour force; and (iv) studies such as the present one analysing changes in both the dimensions and structure of the labour force can indicate modifications in manpower training appropriate for countries which are in the process of moving towards a better balance between agricultural and non-agricultural activities.

Keeping in view the limitations of data on both population and labour force, the author, Dr. G.M. Farooq, has done commendable work in the preparation of this volume by carrying out a systematic and exhaustive analysis of the population census data. The study makes a very valuable contribution to the existing literature on the labour force and manpower in Pakistan and Bangladesh and should be of great use to the economists, demographers, planners and institutions interested in the subject.

(M.L. QURESHI)

Director

P R E F A C E

This book is a considerably revised version of the author's Ph.D. dissertation, "Dimensions and Structure of Labour Force and their Changes in the Process of Economic Development: A Case Study of Pakistan." The study is essentially based on the two post-Independence censuses of pre-1972 Pakistan taken in 1951 and 1961. Initially the intention was to revise the study with the then-forthcoming 1971 census. The political events of 1970-71 led to the division of the country and, among other things, drastically altered the statistical situation. A census limited in scope and with no information on labour force was carried out in Pakistan in 1972. No census has yet been taken in Bangladesh (former East Pakistan which separated from Pakistan in December 1971). Given the absence of reliable sample surveys, these earlier censuses will remain the primary source of labour force information for some time to come for both the countries.

This study is the first basic and comprehensive work on manpower for Pakistan and Bangladesh. It provides a complete treatment of the dimensions of labour force and of its structural aspects. Since it had originally given a parallel analysis of the two provinces of the original Pakistan, viz. West Pakistan and East Pakistan, Mr. M.L. Qureshi, Director of the Pakistan Institute of Development Economics, asked me to prepare it as a comparative study of the two provinces which are now two distinct countries. Thus, it can serve as the basis for future studies in this field in both Pakistan and Bangladesh. The format of the analysis is such that it can be used as a prototype with appropriate modifications for work on labour force in other developing countries.

I am indebted to Professor John D. Durand for his suggestions on the approach followed, for his guidance at almost every stage of the original study, for his invaluable criticism of earlier drafts and, most of all, for his introducing me to the rigorous study of manpower. I also want to thank Professor Ann R. Miller for her expert advice, particularly on Chapters Four and Five, and Professors Richard A. Easterlin and W. Malenbaum for their critical reading of an earlier draft.

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Ghazi M. Farooq

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Chapter 1

INTRODUCTION

Purpose and Scope of the Study

The twenty-year Perspective Development Plan for the pre-1972 Pakistan (i.e. the present-day Pakistan plus Bangladesh), launched in 1965, included the ambitious objective of lifting the economy from a subsistence level to Rostow's "take-off" stage. Given the development strategy and the explicit goal of full employment of a labour force that was rapidly expanding in the wake of accelerated population growth, manpower planning had to be assigned an important role, particularly since the existing level of under employment was pronounced.¹ Manpower planning may be expected to be futile, however, unless an assessment of manpower resources, in both its quantitative and qualitative aspects, is made available. A contribution to such an assessment is the primary objective of the present study.

A second aim is to contribute to a better theoretical understanding of the labour force concept and factors affecting labour force size and structure, mainly in the context of a developing economy. This is urgently required in order to improve existing growth models,² which usually take both labour force and population as exogenous variables increasing in size at some constant exponential rate.³ Fortunately, there is an increasing awareness that the bivariate relationship between

¹Despite its overall impressive performance, the Second Five Year Plan 1960-65 failed to generate additional jobs in sufficient numbers. The Planning Commission estimated the level of unemployment including underemployment at 20 percent of the labour force in 1965. Planning Commission, Government of Pakistan, *The Third Five Year Plan (1965-70)* (Karachi: The Manager of Publications, 1967), p. 25. Also, see Mahbubul Haq, *Strategy of Economic Planning: A Case Study of Pakistan* (Karachi: Oxford University Press, 1963), p. 6. The true level may be higher than this estimate. F.G. Seib, "Manpower Planning in Pakistan," a paper presented to the Seminar on *Population Problems in the Economic Development of Pakistan* (Karachi: Pakistan Institute of Development Economics, 1967), mimeograph, pp. 28-29.

²See R.M. Solow, "A Contribution to the Theory of Economic Growth," *Quarterly Journal of Economics*, Vol. 70, 1965; *Capital Theory and the Rate of Return* (Chicago: Rand McNally, 1965); E.S. Phelps, "The Golden Rule of Accumulation: A Fable for Growthmen," *American Economic Review*, Vol. II, September 1961; H. Uzawa, "On a Two Sector Model of Economic Growth," *The Review of Economic Studies*, Vol. XXIX, October 1961 and Vol. XXX, June 1963.

³The assumptions in most growth models are: full employment of both capital and labour, positive and constant productivities, flexibility in transfer of labour and/or capital from one sector of the economy to another at no cost. Needless to say, growth models built on such assumptions are of limited use in developing countries which are usually characterized by mass unemployment and underemployment, low and not so constant productivity of labour especially in agriculture and a rigid dual-sector economy where the transfer of labour in particular is not without heavy costs in terms of urbanization and associated problems.

the growth of real output (in per capita terms, this is a general measure of economic growth) and the investment ratio is too simple. Two countries which invest the same proportion of their respective gross domestic products may experience different output growth rates. In this connection, some recent economic literature has stressed, among other factors, the importance of labour force; its quantity and its quality.⁴ In fact, it has been suggested that the covariation between the growth of real output and the factor inputs of labour and capital may be more associated with labour than with capital.⁵ Therefore, since labour inputs are a direct source of economic growth, it is important to understand the size and composition of the labour force. In this context, this study hopefully sheds light on some of the complex economic, social and demographic relationships and factors at work in Pakistan and Bangladesh.

The present study is divided into two separate, though interrelated, parts: one referring to the dimensions of labour force and the other to its structural aspects. Since no comprehensive work in the labour force field had previously been done for the pre-1972 Pakistan, the present efforts are equally divided between the two aspects. The analysis of the dimensions of labour force relies to a large extent on demographic techniques. However, some econometric methods are used to construct an Aggregative Model of Labour Force Participation in Appendix C, as an effort to quantify some of the determinants of the propensity to participate in economic activity. The treatment of the structural aspects, more economic in nature, is concerned with the distribution of labour force by industry, occupation and status, their interrelations and their changes in the course of economic development. An examination of these three primary classifications may shed light on the factors and processes of changes in the structures of labour supply and labour demand. Also, given some reliable data in the appropriate dimensions, production functions, which usually assume "homogeneity of labour" (the weakest assumption by any criterion), can be remodelled to take into account the different types of labour engaged in production by using a vector of labour inputs. This may greatly enhance the practical relevance of production functions.

The entire analysis is divided into two parallel parts for Pakistan and Bangladesh. When this study was done these two formed the western and the eastern provinces of the pre-1972 Pakistan respectively. There were enormous discrepancies in the shares of area and population: in 1961, the eastern province or the present-day Bangladesh, carried only one-sixth of the total area of Pakistan but contained 56 percent of the country's total population. But more than the physical factors, it was the economic disparity between the two provinces as well as their differing economic structures which necessitated the treatment of the two provinces as separate entities. For example, the 1963/64 per capita income in terms of 1959-60 prices was Rs 313 in Bangladesh and Rs 403 in Pakistan. The percentage of non-agricultural labour force—an indicator of industrialization—was 14 in Bangladesh in 1961 as compared to 40 in Pakistan. When standardization is required to compare Pakistan and Bangladesh, we have used the combined total for former Pakistan as the base.

⁴See for example, E.F. Denison, *The Sources of Economic Growth in the United States and the Alternatives before Us*, Supplementary Paper No. 13 (New York: Committee for Economic Development, 1962); W. Malenbaum, "Health and Productivity in Poor Areas," in H.E. Klarman, ed., *Empirical Studies in Health Economics* (Baltimore and London: The Johns Hopkins Press, 1970); W. Galenson and G. Pyatt, *The Quality of Labour and Economic Development in Certain Countries* (Geneva: International Labour Office, 1964).

⁵*Ibid.*, pp. 22-38.

Sources of Data

The decennial population censuses of the pre-1972 Pakistan are the chief sources of comprehensive statistical data on labour force. There have been sample surveys on labour force, *Manpower Survey* of 1954-56, 1956-57 and 1959 and *Quarterly Survey of Current Economic Conditions* undertaken in 1963-64 and 1965-66; but these survey materials are of limited use for the present analysis since they not only lacked comprehensive coverage (both geographic and substantive) but were found to be deficient in quality and reliability.⁶

Since 1947, when Pakistan gained independence, two population censuses have been undertaken, one in 1951 and another in 1961. These are the major sources of information for the present analysis. For the dimensional aspects, it has been possible to construct longer historical series through the use of the British India Censuses of 1901-1941. In addition, the *Annual Economic Survey*, the *Statistical Yearbook*, the *Survey of Current Economic Conditions* and the *Third Five Year Plan* series are used as sources for supplementary information on education, production by industrial origin, and strategy, targets and achievements of social and economic planning.

Concept and Census Definitions of Labour Force

Labour force is equivalent to the concept of "economically active population" and comprises all persons "who furnish the supply of labour available for the production of economic goods and services."⁷ Thus, the labour force includes employees who work for profits and persons assisting in family enterprises without pecuniary rewards. Both the employed and the unemployed (during the time reference adopted in the census) are treated as members of the labour force.

It is relatively easier to determine economic activity in a developed economy within which contract work is the main type of labour force participation than in one of the agrarian, rural type where the majority of persons work on their own farms or small businesses, often with family help. In the latter case, the dimensional aspects of labour force may be sensitive to the definition of economic activity and even to the wording of the questions asked about it in the census. This sensitivity, in turn, has an important bearing on the reporting of the structural aspects of labour force as under- or over-reporting of labour activity is not proportionately shared by every industry or occupation. Another consequence of the variations in definitions used is the difficulty of constructing comparable data sets over time.

The 1961 Census of all Pakistan included a person 10 years and older in the labour force if he or she was working for profit or earning wages or a salary, helping any member of his/her family, or was not working but looking for work during the last week if the person was a non-agricultural worker, but with no reference period if the person was an agricultural worker.

⁶Rahmat Ali, "Labour Force Statistics in Pakistan," a paper contributed to *CENTO Symposium on Household Surveys*, 1966.

⁷For discussion of different terms commonly used in describing the economic activity of a population, see A.J. Jaffe and C.D. Stewart, *Manpower Resources and Utilization, Principles of Working Force Analysis* (New York: John Wiley and Sons, 1951), Chapter 2.

The definition adopted in the 1951 Census was different from the above in the minimum age limit for economic enumeration (12 rather than 10 years) and in content. In 1951 a person had to be *self-supporting* or *partially self-supporting* to be included in the labour force. As is discerned in subsequent chapters, the use of different words seems to have had an important bearing on enumeration, particularly on the count of female unpaid family workers.

The British India Censuses (like most of the censuses conducted elsewhere during the same period) applied a "gainful worker" standard. In contrast, the "labour force" standard⁸ was used to measure non-agricultural activity in the 1961 census and, apparently, total economic activity in 1951. However, we expect that in the pre-Independence period, the application of either of these two concepts would have made little difference. More important are the differences in scope of the definitions used in the pre-Independence censuses. Contrary to the more recent practice, these censuses included in the economically active population such inactive groups as *rentiers*, pensioners, share-holders, etc. (even when they had not been actively participating in economic activity). Analysis based on the face value of such statistics will, of course, be misleading. The criteria used to adjust the historical data are laid down in Appendix A.

Limitations of the Study

Many of the limitations of the present study are inherent in the census data used in the analysis.⁹ In addition, the data, being almost wholly from decennial censuses, are discontinuous. The lack of adequate data for the intervening periods restricts the scope of the study. This may not be too limiting for the analysis of the dimensional aspects of labour force as one can argue, albeit with reservations, that there may not be significant annual deviations from the trend within a decade. But for the analysis of the structural aspects, time-continuity of data is very important for gauging the pattern of structural changes which take place in the course of economic development.

Perhaps the most limiting aspect of this analysis is, however, the terminal date of observation. Pakistan had achieved impressive economic progress since 1960 and labour force data, if they were available, would have permitted analysis of the impact of this progress on the manpower structure and evaluation of the requirements for manpower categories in the future.

However, the 1961 Census in particular provided highly useful data and, with adjustment of these data and those of the 1951 Census, important results are

⁸According to the concept of a "gainful worker," economically active persons are those who report some usual occupation in the census; no questions asked about when work was actually done. The "labour force" standard includes only the persons actually at work or seeking work during some specified period. For detailed discussion of the two concepts, a history of their development, and the effects of a shift from one standard to the other see Gertrude Bancroft, *The American Labour Force: Its Growth and Changing Composition* (New York: John Wiley and Sons, 1958), Appendix C; John D. Durand, *The Labour Force in the United States, 1890-1960* (New York: Social Science Research Council, 1948), Appendix A; and "Development of Labour Force Concept, 1930-40", in *Labour Force Definition and Measurement* (New York: Social Science Research Council, 1947), pp. 80-90; Jaffe and Stewart, *op. cit.*, Chapter 2 and Appendix D.

⁹For a detailed discussion of limitations in the data of Pakistani and British Indian censuses, see Ghazi M. Farooq, "Labour Force Participation Rates in Pakistan: 1901-1961," *The Pakistan Development Review*, Vol. VIII, Spring 1968, No. 1.

obtained from both an empirical and a theoretical point of view. It is not too optimistic to remark that the framework of the present analysis could be applied to the 1970s rounds of the censuses in the two countries.

One of the aims of this study is to point out certain areas where future censuses and survey activities ought to be concentrated. We have also tried to raise questions about and sometimes to recommend procedures for the formulation of census or survey questionnaires, their definitions and programmes of tabulation in an effort to achieve optimal utilization of these data.

ANALYSIS OF LABOUR FORCE PARTICIPATION IN HISTORICAL PERSPECTIVE

1961 Labour Force and Comparisons with other Countries

Theoretically, given the product per worker and conditions of unemployment and underemployment, there is a positive relationship between economic prosperity measured in terms of gross national product (GNP) per capita and the ratio of labour force to total population (the latter is referred to as the crude activity rate).¹ But the advantage of a high crude activity rate is deceptive if it results from the inclusion in the labour force of many marginal workers with low productivity. Also, while the inclusion of many women in the labour force may raise GNP, this advantage is partly illusory since their alternate activities if not in the labour force are economically valuable. The crude activity rate, however, can be treated as a first approximation of the relative size of labour supply.

The proportion of 32.4 percent of the total population in the labour force in Pakistan and the corresponding proportion of 34.3 percent in Bangladesh appear quite low when compared to the figures for many other countries. Table II-1 provides a comparison of crude activity rates by sex in Pakistan and Bangladesh with those of some selected countries. As is, apparent, the countries were selected on the basis of their respective economic, social, and demographic structures. In international comparisons, allowances must be made for differences in definitions and procedures. However, though the comparisons of female labour force statistics is particularly unreliable (this is the reason for not computing female standardized rates), those for males are less affected by these differences.²

¹The terms *participation rate*, *activity rate*, *work rate* and *participation in economic activity* are used as synonyms and refer to the percentage of population in the labour force. The age-specific participation or activity rate is defined as the percentage of economically active persons among the population of a given age group. Also, throughout this study the terms *economically active population* and *labour force participants* are used interchangeably.

²It may primarily be a different "minimum age limit" for economic enumeration that impairs international male comparisons. But note that different minimum age limits will not impair comparability unless participation in the labour force is appreciable for ages below the given limit in some countries. For the countries listed in Table II-1 this problem does not appear to be very important. For example, the U.S. and Japan had higher age limits but, being highly developed industrial economies, they have insignificant labour force contributions from the 10-14 age group. Male activity rates for this group were estimated to be only 0.9 percent for Japan in 1955 and 2.6 percent for the U.S. in 1950. United Nations, Department of Economic and Social Affairs, *Demographic Aspects of Manpower, Report-1, Sex and Age Patterns of Participation in Economic Activities*. Population Studies, No. 33 (New York, 1962), Table A-5.

Table II-1 evidences higher crude activity rates for all the countries than for Pakistan and Bangladesh with the exception of the Philippines. But their male rates are higher than the rates in the Philippines, Thailand and the U.S., though still lower than those of India and Japan.

The size of a nation's labour force is not only influenced by the size of the population but also by the age structure. (A framework of factors determining the size of labour force is given in Chapter 3 and Appendix C.) To assess the relative levels of participation in economic activity independent of divergent age structures, standardized male activity rates are computed. The age distribution of the 1961 male population in former Pakistan is used as the standard.³ With this standardization for age, the participation in economic activity for males in Bangladesh is larger than that for any other country in Table II-1. This implies that the male crude activity rate there would have been higher but for a comparatively unfavourable age structure.

Table II-1

Crude Activity Rates in Pakistan, Bangladesh and Selected Countries by Sex

Country	Census date	Minimum age limit for economic enumeration	Crude activity rates			Age standardized male activity rates*
			Both sexes	Males	Females	
Pakistan	1961	10	32.4	55.0	6.1	52.6
Bangladesh	1961	10	34.3	56.2	10.8	56.9
India	1961	0	43.0	57.1	28.0	53.0
Japan	1960	15	47.1	58.5	36.2	47.0
Philippines	1960	10	31.5	46.5	16.3	48.9
Thailand	1960	11	52.7	54.3	51.1	53.2
United State	1960	14	39.0	53.8	24.6	44.6

Sources: Office of the Census Commissioner, Ministry of Interior, *Population Census of Pakistan 1961: Census Bulletin No. 5*, Table 3; United Nations Department of Economic and Social Affairs, *Demographic Yearbook 1964* (New York: 1965), Table 8.

*Age distribution of the 1961 former Pakistan male population is taken as the standard.

Standardization for age makes the labour force participation differential between Pakistan and Bangladesh even more significant, implying that there is a more favourable age structure in Pakistan. Compared to 31.9 percent for Pakistan, Bangladesh has 35.9 percent of its male population in the dependency age span of under 10 years. The primary reason seems to be higher fertility in Bangladesh.⁴

³For the countries included in Table II-1, the ranking will not change (although the size of the differential will) if population structure of some other country in the table is used as the standard instead of the Pakistani one.

⁴In almost every study, the crude birth rate in Bangladesh is estimated to be higher than that in Pakistan. Crude death rates are estimated to be similar in both. See M. Zelnik and M.R. Khan, "An Estimate of the Birth Rate in East and West Pakistan," *The Pakistan Development Review*, Vol. V, No. 1, Spring 1965; Population Growth Estimation, *Report of the Population Growth Estimation Experiment: Description and Some Results for 1962 and 1963* (Karachi: Pakistan Institute of Development Economics, from here on referred to as P.I.D.E., 1968), pp. 80-84.

However, the crude activity rates for females in Pakistan and Bangladesh are the lowest among the countries listed in the table. This will be true even if standardized for age. This, as is shown later, may partly be due to the social customs and conventions in vogue which inhibit the reporting of female participation in economic activity.

Historical Trend of the Ratio of Labour Force to Population, 1901-1961

Projections of future patterns of population change or economic growth may be improved when measures of trends over considerable time periods are available to be used for extrapolation or as checks on underlying assumptions. By detailed examination and analysis of district reports from the censuses of India (*i.e.*, pre-independence or British India) it is possible to reconstruct demographic changes for the areas comprising Pakistan and Bangladesh. Here an historical study of labour force participation in the two countries will be attempted by estimating series of population and labour force from 1901 to 1961. The non-availability of detailed information on economic activity by districts for India does not allow estimates prior to 1901. Also, because of World War II, economic data for 1941 are not available.⁵ For references to the British India censuses used, see Appendix B.

The methodology of labour force estimation and the coverage of the area and geographical administrative scheme used for reconstructing population and labour force series from 1901 to 1931 are discussed in Appendix A. Also in Appendix A, the estimates are tested by a comparison with estimates obtained for India in the corresponding period.⁶

Trend by Country

Table II-2 shows the trend of crude activity rates by sex for Pakistan and Bangladesh over the 1901—1961 period. During this period there has been a continuous increase in the total number of persons in the labour force from 5.7 to 12.8 millions in Pakistan and from 9.6 to 17.4 millions in Bangladesh coincident with an expansion in the population from 16.5 to 39.4 millions in Pakistan and from 29 to 50.8 millions in Bangladesh. But the increase of labour force was not parallel with that of population. In both countries there were two distinct time trends; first, 1901—1951, when the growth of labour force lagged behind population growth, and the second, 1951—1961, when higher labour force growth was recorded. These trends are measured by the following average annual exponential rates of growth.

	<i>Pakistan</i>	<i>Bangladesh</i>
	(in percentages)	
1901-1951		
Population growth rate	1.32	0.74
Labour force growth rate	1.07	0.57
1951-1961		
Population growth rate	2.08	1.91
Labour force growth rate	2.62	3.07
1901-1961		
Population growth rate	1.45	0.96
Labour force growth rate	1.33	0.99

⁵The 1941 population figures are available in the Pakistani Census Reports.

⁶Parts of this section and Appendix A are from Ghazi M. Farooq, "Labour Force Participation Rates in Pakistan: 1901-1961," *Pakistan Development Review*, Vol. III, No. 1, Spring 1968, pp. 74-103

male population 15 years and over would have produced a decrease of about 3 points in the male crude activity rate. However, the U.N. recommended tests for evaluation of the accuracy of age reporting in censuses.—*viz.*, age ratio score, sex ratio score and joint scores, reflect a stupendous degree of misreporting of age in the British India censuses.¹² Age reporting in the censuses of former Pakistan is also seriously questioned in subsequent sub-section. But we have reason to believe that the age structure might have changed during this period as a result of the changes observed in mortality. In India as a whole, famines and epidemics kept the population almost stationary up to 1921. Coale and Demeny suggest that 1921 age distribution of India was affected by the extraordinary influenza epidemics of 1918-19; but post World War I age distributions have been affected by declining mortality.¹³ Davis also concludes that all sources of data for India indicate quite substantial improvement in mortality, especially since 1920. Infant mortality rates have also declined appreciably (though not to the same extent as crude death rates) since 1918.¹⁴ As Coale suggests, "most mortality improvements in the past have produced a younger population than would have resulted from unchanged mortality, other factors remaining the same".¹⁵ It has been estimated that the "expectation of life at birth" improved from about 22 years in 1901 to about 37 years in 1951.¹⁶ If the fertility rate is assumed to have remained constant at a high level, then, according to U.N. model life tables, this improvement in the expectation of life would have caused a decline of 3.5 to 4 percentage points in the proportion of population 15 years and over.¹⁷

Thus it seems plausible that the continuous post World War I improvement in mortality resulted in a younger population thereby reducing the proportion of male population participating in economic activity. This, however, would explain only a part of the secular decline in labour activity. Also, the recorded decrease was mainly during 1901-1921, when there was little, if any, improvement of mortality.

A minor factor which probably contributed slightly to the change in age structure and to the 1901-1951 decline in activity was the continuous migration over time from the former Pakistan bound areas to the Indian bound ones. Both East Bengal (now Bangladesh) and areas now included in Pakistan experienced sex-selective emigration continuously from 1901 to independence.¹⁸ But, considering

¹²Census of India, 1961, *Age Tables, Paper No. 2 of 1963* (Delhi: The Manager, Government of India Press, 1963), pp. 38-40.

¹³A.J. Coale and P. Demeny, *Regional Model Life Tables and Stable Populations* (Princeton: University of Princeton Press, 1966), p. 37. For detailed discussion on effects of declining mortality, see A.J. Coale, "The Effects of Changes in Mortality and Fertility on Age-Composition," *The Milbank Memorial Fund Quarterly*, Vol. XXXIV, No. 1, 1956; (footnote continued on following page) A.J. Coale, "Estimates of Various Demographic Measures through the Quasi-stable Age Distributions," *Emerging Techniques in Population Research*, Proceedings of the 1962 Annual Conference of the Milbank Memorial Fund, pp. 175-193; P. Demeny, "Estimation of Vital Rates for Population in the Process of Destabilization," *Demography*, Vol. 2, 1956.

¹⁴Kingsley Davis, *The Population of India and Pakistan* (Princeton: Princeton University Press, 1958), Tables 8 and 9, pp. 33-35.

¹⁵Coale, *op. cit.*, (1956), p. 114.

¹⁶Census actuaries estimated the expectation of life at birth of 21.84 years in 1901-1910; 32.17 in 1941-1950 and 41.85 in 1951-1960. Census of India, 1961, *Paper No. 2 of 1963*, Table 21.

¹⁷U.N., Department of Economic and Social Affairs, *The Aging of Populations and its Economic and Social Implications*. Population Studies, No. 26 (New York, 1956), Table 15.

¹⁸K.C. Zachariah, *A Historical Study of Internal Migration in the Indian Subcontinent, 1901-31* (New York: Asia Publishing House, 1964), pp. 201-215.

the magnitude of the population and labour force, this migration was relatively small and not enough to have a substantial impact on the activity rate. And the fact that the female work rate in these areas also declined during this period (migration, being mainly male-selective, may not affect female activity rates), plus the observation of a secular decline in the economic activity rate in India itself, discounts the role of migration as a factor in the secular decline in the overall activity rate.

“Urbanization” is another factor that may tend to limit the size of the working population, particularly for females. In former Pakistan, however, very little urbanization occurred during the period 1901-1951. The proportion of urban population increased from 5.1 percent in 1901 to only 10.4 percent in 1951.¹⁹

The introduction of legislation controlling child labour, and the diffusion of education, both at the primary level and in terms of increased years of schooling, may also be mentioned as minor factors in the decline of participation rates. Even though no direct census evidence is available, the fact that only about 10 percent of the males and 2 percent of the females in former Pakistan had 5 years or more of schooling in 1961,²⁰ suggests that diffusion of education has not been of such a magnitude as to account for an appreciable decline in the activity rates.

The factors underlying the decline of more than three percentage points in the male crude activity rate during the 1901-1911 decade in Bangladesh (if this decline is not a statistical artifact) remain especially obscure.

Trend by Major Geographical Regions

Table II-3 provides measures of the trends of crude activity rates from 1901 to 1961 by the major regions of the 1951 census administrative geographical scheme.²¹

The regional trends of activity rates appear to be, more or less, identical with the aggregate country ones analyzed in the preceding sub-section. In most areas, the total crude activity rates declined over the 1901-1951 time span, but universally increased during 1951-1961. Male crude activity rates also followed this general trend. There are, however, some deviations, particularly in Pakistan. For example, N.W.F. Province expanded its total crude activity rate from 34 and 32.3 percent in 1901, 1911 to 36 percent in 1921, despite a decline in female crude activity rate in 1921. This jump was thus entirely the result of an increase of almost 7 percentage points in the male crude activity rate. After allowing for enumeration errors, a plausible explanation may be found in the composition of the population in N.W.F. Province. As mentioned in Appendix A, the population of Frontier Regions is excluded from N.W.F. Province. With no restrictions, frequent transfer of population between N.W.F. Province and Frontier Regions is certainly possible, plausibly in favour of N.W.F. Province, given the latter's higher economic achievement level. Also, even until recently, tribal people (known as Powindas) from the neighbouring

¹⁹W.A. Abbasi, “Population of Pakistan—Summary View,” *Population Growth and Economic Development*, Summary Report of a Seminar, September 1959 (Karachi: P.I.D.E., 1960), p. 126.

²⁰U.N. Department of Economic and Social Affairs, *Demographic Yearbook* 1964, (New York, 1965), Table 35.

²¹The 1951 census geographical classification, more or less, corresponds to the one used in the British India censuses of 1901-1941. Referred to as the “1951 scheme” it is described in Appendix A. This scheme is used only in the present section.

areas in Afghanistan made seasonal migrations to N.W.F. Province in pursuit of a livelihood, particularly during the cropping seasons. These movements, though mostly temporary, if made during the enumeration period would result in larger reporting of economic activity.

Sind is another example of a deviation from the general trend in Pakistan. While there was only a small decline in other regions, both the total and male crude activity rates of Sind slumped sharply in 1931, by more than 4 percentage points as compared to the previous census year. The explanation is simple. Pakistan as a whole did not experience the same degree of religious and political factionalism as did Bengal (which, as mentioned before, led to reporting of a very low activity rate in Bangladesh) but, given the relatively high proportion of Hindus in Sind, this region seems to identify more with Bengal during this period.

Table II-3

Crude Activity Rates by Sex, Province, Division and State, 1901-61

Country, Division and State	1901	1911	1921	1931	1951	1961
<i>Both Sexes</i>						
Pakistan	34.8	34.1	33.3	31.8	30.6	32.4
Baluchistan & States Union	35.8	34.8	34.8	33.6	30.7	30.9
N.W.F. Province	34.0	32.3	36.0	35.2	30.1	30.3
Punjab & Bahawalpur State	32.6	34.0	31.9	31.2	29.8	32.0
Districts	32.6	34.1	31.9	31.1	29.8	31.8
Bahawalpur State	32.4	32.2	32.6	31.3	30.2	33.2
Sind & Khairpur State	41.4	35.2	36.0	31.6	33.4	35.2
Districts	41.6	35.3	35.9	31.5	33.5	35.4
Khairpur State	39.7	34.2	38.5	33.4	32.0	32.5
Federal Capital Area,* Karachi	—	—	—	—	33.7	33.6
Bangladesh	33.3	31.6	31.7	25.2	30.7	34.3
Rajshahi Division	35.5	33.9	34.3	27.8	29.1	31.4
Khulna Division	33.1	32.5	30.7	27.4	29.3	29.8
Dacca Division	32.0	30.7	31.2	23.0	31.7	33.7
Chittagong Division	32.7	29.5	30.4	23.8	32.0	40.9

—Continued

Table II-3—Continued

Country, Division and State	1901	1911	1921	1931	1951	1961
<i>Males</i>						
Pakistan	57.0	57.0	56.1	53.8	55.1	55.0
Baluchistan & States Union	65.1	60.8	58.9	56.9	54.9	54.6
N.W.F. Province	56.7	56.2	63.1	60.4	51.2	52.6
Punjab & Bahawalpur State	55.4	56.6	53.8	52.7	54.5	54.8
Districts	55.4	56.7	53.7	52.4	54.4	54.8
Bahawalpur State	56.1	55.5	56.2	56.4	55.5	55.0
Sind & Khairpur State	60.1	57.8	58.3	53.0	59.4	56.6
Districts	60.2	57.6	57.9	52.7	59.5	56.8
Khairpur State	58.4	60.6	64.3	59.5	57.4	53.8
Federal Capital Area,* Karachi	—	—	—	—	57.2	56.7
Bangladesh	60.6	57.5	56.4	45.0	54.2	56.2
Rajshahi Division	63.5	61.1	61.0	49.3	53.1	57.1
Khulna Division	61.1	59.5	54.9	49.8	54.9	55.8
Dacca Division	60.1	57.2	56.8	40.7	54.7	56.6
Chittagong Division	57.5	52.3	52.5	42.7	54.0	55.3
<i>Females</i>						
Pakistan	8.5	6.2	5.4	4.8	2.1	6.1
Baluchistan & States Union	0.1	1.9	2.0	3.6	1.2	2.0
N.W.F. Province	6.7	4.2	2.3	4.4	5.2	5.9
Punjab & Bahawalpur State	6.1	6.5	5.5	5.1	1.5	5.8
Districts	6.3	6.8	5.6	5.3	1.6	5.6
Bahawalpur State	3.6	3.6	3.8	2.4	0.3	7.6
Sind & Khairpur State	18.8	7.7	7.7	4.3	1.6	9.4
Districts	18.9	7.9	7.4	4.5	1.7	9.6
Khairpur State	17.2	2.8	6.3	1.5	0.4	6.6
Federal Capital Area,* Karachi	—	—	—	—	2.2	3.2
Bangladesh	5.1	4.6	5.7	4.2	5.0	10.8
Rajshahi Division	5.7	4.8	5.6	4.5	2.9	3.9
Khulna Division	3.9	4.1	5.0	3.4	1.2	1.8
Dacca Division	3.2	3.3	4.4	4.2	6.3	8.9
Chittagong Division	7.7	6.3	7.9	4.4	7.9	25.5

Sources: Same as Table II-2.

*From 1901-31, Federal Capital Area, Karachi, was included in Sind.

Regional female activity rates do not form a clear-cut general pattern. In both the cross-sections and the changes over time, the range of variation is phenomenal. For example, in Pakistan in 1901 compare the crude activity rate of 18.8 for Sind to that of 0.14 for Baluchistan; and again for Sind, 18.8 in 1901 with 1.7 percent in 1951. And it was Sind again along with Punjab with their population weights, which were responsible for the expansion in the overall Pakistani female activity rate from 2.1 percent in 1951 to 6.1 percent in 1961. Similarly, in Bangladesh, Dacca and Chittagong divisions alone were responsible for the female activity rate being higher than that of Pakistan in both 1951 and 1961, and the changes in these two divisions explain most of the increase in activity rate from 5 percent in 1951 to 10.8 in 1961.

Comparisons of Detailed Regional Patterns of Labour Force Participation in 1951 and 1961

After decades of declining labour force participation rates, the trend reversed during 1951-1961. As Table II-2 shows, the rate for Pakistan increased from 30.7 percent in 1951 to 31.8 percent (adjusted rate) in 1961 and correspondingly from 30.7 to 34.3 percent for Bangladesh.²² This observation appears more striking when we find that a comparatively unfavourable age structure was reported in the 1961 census (the youngest segment of the population—under 10 years—expanded from 28.4 percent in 1951 to 35.1 percent in 1961 in former Pakistan).²³ In addition, urbanization and educational opportunities expanded; these being deterrent factors to, respectively, female and child entry into the labour force. What, then, are the factors responsible for the apparent increase?

The analysis by sex of the information provided by Table II-2 shows that this increase in total crude activity rate was primarily due to the expansion in female crude activity rate from 2.1 to 6 percent for Pakistan and from 5 to 10.4 percent for Bangladesh over 1951-61 period. However, it is correctly inferred that,

In 1951, a female must have been self-supporting or partially self-supporting to be included in the labour force. Given the patriarchal organization of the Pakistan family, it would be very difficult to secure acquiescence to this question. In 1961, it was only necessary to be helping a member of the family in order to be included in the labour force. The apparent increase in the proportionate size of the labour force can be attributed to a large extent to the fact that females who were unpaid family workers were excluded from the labour force in 1951 but were included in the 1961 census.²⁴

²²Table II-2 shows that the lowering of the minimum age limit for labour force enumeration from 12 years in 1951 to 10 years in 1961 provides fuller coverage of male labour activity. Note in particular, the appreciable increase of about 2 percentage points in the male crude activity rate observed for Bangladesh with this backward shift of the age limit. This reflects the significance of child labour—an important aspect of an agrarian economy. The female crude activity rate is not significantly affected by this change in age limit.

²³Office of the Census Commissioner, Ministry of the Interior, *Population Census of Pakistan, 1961, Census Bulletin No. 3, Age, Sex and Marital Status*, Statement No. 2. This may be largely due to inaccurate age reporting. Credibility of age reporting and its effects on reporting of economic activity are discussed in detail in the subsequent sub-section.

²⁴Lee L. Bean, *et al.*, "The Labour Force of Pakistan: A Note on the 1961 Census," *The Pakistan Development Review*, Vol. VI, No. 4, Winter 1966, p. 590.

Thus the indication of an expanding labour force from 1951 to 1961 is doubtful as far as females are concerned. The changes in definition may also have affected the enumeration of male unpaid family workers, but the effect on the male crude activity rate may not be very large.

The male crude activity rate remained constant during 1951-1961 in Bangladesh but declined by 1 percentage point in Pakistan. This decline in Pakistan is in line with the prevailing trend in the world. It is quite plausible, that during this period the proportion of male population under 12 years as reported by the census did increase to some extent—exerting an unfavourable effect on the proportion of the male population participating in labour activity. Also the considerable expansion of the armed forces during this intercensal period (especially with Pakistani males) may be cited as yet another factor, though only secondary, in explaining the decline in the male activity rate in Pakistan. This results from the inclusion of the armed forces in the total population but not in the labour force. Since figures on exact size of the armed forces are not available, we cannot translate this effect into numbers.

Detailed Regional Patterns

Here, the emphasis is on both cross-sectional analysis of regional patterns in economic activity and temporal changes in these patterns in the intercensal decade. Under the 1961 geographical classification scheme,²² the basic unit for analysis is the "district," the primary geographical and administrative cell in the provincial set-up.

The importance of such detailed regional comparisons is apparent. They aid in understanding the forces behind the propensity of different regional groups in a population to participate in income-producing activity. This becomes very relevant when there is a great deal of diversity in customs and conventions in different types of communities distributed over the country. This seems true for both Pakistan and Bangladesh with communities characterized by different languages and cultures. (There is a well known hypothesis that the absence of mass literacy and of general emancipation from poverty makes for persistent heterogeneity of social and cultural characteristics, and that these characteristics shift quickly toward national norms with significant strides in economic development.) Hence, much meaningfulness is lost in the averaging effect of aggregates. Besides reflecting the influence of local social, economic and cultural norms, detailed regional comparisons may provide a sound

²²Under the 1961 census administrative geographical classification scheme, former Pakistan was divided into two provinces, East Pakistan and West Pakistan. The province of East Pakistan consisted of 4 *divisions* and 17 *districts*, and West Pakistan of 12 *divisions* and 45 *districts*. Appendix Figure A-1 summarizes the administrative components of districts and divisions. Because of its clarity and practicality in making detailed comparisons, the 1961 scheme will be used throughout the study for regional analyses.

For meaningful understanding of regional characteristics, the reader should get acquainted with the following terminology describing different geographical administrative units as used in both the British Indian and Pakistani censuses: *District* is the recognized unit of administration. It is under the charge of a Deputy Commissioner who combines the functions of District Magistrate and Collector. *Division* is a major geographical area consisting of a group of 2 to 5 districts. A division is so formed as to allow maximum administrative convenience and efficiency. Each division is under the charge of a Commissioner who has headquarters in its major city. A division, however, is not only an administrative civil area; it represents a relatively homogeneous region. A study which uses division as its basic unit of analysis may cover the regional variability to a large extent.

basis for projections and policy making.²⁶ In Appendix C, with the aid of a model, we will attempt to measure some determinants of the varying propensity to participate in work activity among the districts. Extra effort is made to calculate both crude and refined activity rates. The rates are adjusted for some differences in definitions of labour force.

Table II-4 provides crude activity rates for each district by sex for 1951 and 1961. As mentioned earlier, the minimum age limit for economic enumeration was different in the two censuses. For true comparisons, adjusted crude activity rates for 1961 were calculated by subtracting the labour force participants reported in age group 10-11 from the total labour force figures in each district.

Table II-4 reveals distinct regional patterns. In both countries, the female crude activity rates seem to be the primary determinants of regional variations in total labour force participation by district. This was true in 1951 and in 1961. However, the range of variation in district male crude activity rates was substantial within each country. In Bangladesh the range was from 47.2 in Kushtia to 57.9 percent in Chittagong Hill Tracts in 1951 and in 1961, 51.1 in Noakhali to 61 percent in Chittagong Hill Tracts. In Pakistan, the range was even larger; 46.4 for Kohat²⁷ to 60.9 percent in Dadu in 1951 and from 44 again for Kohat to 58.9 percent for Lasbela in 1961. But there is a clustering of the rates around the country male activity rate. Also, in comparing the 1951 situation with that of 1961, the male crude activity rates in Bangladesh seem to be generally stable. In Pakistan there was overall a slight decline. It is interesting to note that most districts maintained their ranking. Again female activity rates exhibit substantial changes over time.

Table II-4
Crude Activity Rates in 1951 and 1961 (adjusted) by Sex and District

Country, Division and District	1951			1961 (adjusted)		
	Both sexes	Males	Females	Both sexes	Males	Females
Pakistan:	30.6	55.1	2.1	31.8	54.1	6.0
Peshawar Division	30.1	50.3	7.8	29.8	51.6	6.1
Hazara	30.2	50.6	7.9	31.6	51.7	10.8
Mardan	35.3	48.5	20.8	28.5	53.5	1.6
Peshawar	28.6	52.4	1.2	29.2	53.4	2.3
Kohat	24.2	46.4	1.1	29.1	44.1	13.9

²⁶This regional analysis assumes special importance as the 1951 and 1961 censuses were the first one undertaken in independent former Pakistan. With enumeration in better social, political and psychological conditions, and with improved methodology and procedures, these census data may represent closer approximations to the true patterns of participation in economic activity than do those of the pre-independence censuses.

²⁷Actually, the lower limit of the range is 39.9 percent for Kharan but this rate may have been affected by the very small population size and the seasonal work conditions responsible for significant mobility to other mining areas of the Kalat division. Lack of employment and a relatively high death rate due to inadequate medical facilities, according to the census authorities, resulted in a 22 percent decline in the population of Kharan in the 1951-1961 decade. See Office of the Census Commissioner, *op. cit.* (1961), section 2.5.

Country, Division and District	1951			1961 (adjusted)		
	Both sexes	Males	Females	Both sexes	Males	Females
Dera Ismail Khan Division	30.2	55.2	1.2	28.4	50.1	3.9
Dera Ismail Khan	31.0	56.6	1.3	29.1	49.7	5.1
Bannu	29.5	54.2	1.1	27.7	50.6	2.7
Rawalpindi Division	30.1	54.2	3.3	31.2	51.1	9.8
Campbellpur	30.7	56.2	2.9	35.3	53.1	16.9
Rawalpindi	29.6	53.3	2.3	29.4	48.7	8.6
Jhelum	29.5	52.5	5.1	28.5	49.4	7.1
Gujrat	30.6	54.8	3.2	31.8	53.0	8.3
Sargodha Division	30.3	55.8	1.4	32.0	55.4	5.2
Sargodha	31.7	56.4	3.5	33.1	55.4	7.6
Mianwali	30.4	54.4	3.6	31.2	53.5	6.3
Lyallpur	29.6	55.8	0.1	31.4	55.2	4.0
Jhang	30.2	55.8	0.2	32.6	57.1	4.4
Lahore Division	29.2	52.8	1.5	30.0	53.7	2.4
Lahore	29.8	54.2	0.3	29.6	52.3	2.4
Gujranwala	29.1	51.0	3.6	30.5	54.8	2.5
Sheikhupura	30.5	56.2	1.0	31.2	56.3	2.5
Sialkot	27.8	50.2	1.8	29.2	53.3	2.3
Multan Division	29.7	54.8	0.8	32.3	55.0	6.1
Dera Ghazi Khan	29.9	54.9	0.2	34.9	54.4	12.3
Muzaffargarh	30.1	54.6	1.5	33.0	55.2	7.3
Multan	30.0	54.9	1.3	31.8	54.4	5.6
Sahiwal	29.2	54.6	0.2	31.7	55.9	4.1
Bahawalpur Division	—	55.5	—	32.5	53.9	7.4
Bahawalpur	—	—	—	32.0	53.7	6.2
Bahawalnagar	—	—	—	32.0	55.5	4.9
Rahimyar Khan	—	56.8	—	33.4	52.8	10.3
Khairpur Division	33.4	58.8	2.3	35.2	54.5	12.1
Jacobabad	34.0	58.6	4.1	43.0	56.5	26.5
Sukkur	34.0	59.4	2.8	33.1	53.9	8.2
Larkana	33.9	60.5	2.2	37.6	54.7	17.8
Nawabshah	32.3	57.6	1.6	31.9	54.6	4.6
Khairpur	32.0	57.4	0.4	31.9	52.9	6.5
Hyderabad Division	33.4	59.9	1.1	33.7	56.3	6.4
Hyderabad	33.0	59.6	0.9	31.8	55.3	2.7
Dadu	34.7	60.9	2.4	33.2	56.4	5.1
Tharparkar	33.0	59.7	1.0	37.9	57.5	14.5
Sanghar	33.8	60.3	0.5	34.0	56.2	6.7
Thatta	33.0	59.6	0.6	32.6	57.7	4.0

—Continued

Table II-4—Continued

Country, Division and District	1951			1961 (adjusted)		
	Both sexes	Males	Females	Both sexes	Males	Females
Quetta Division	30.7	54.2	0.6	30.3	53.2	1.2
Quetta/Pishin	30.0	50.8	0.8	29.3	50.3	1.0
Sibi	31.6	57.2	0.3	31.5	55.6	2.0
Loralai	30.5	55.3	0.3	31.2	56.4	0.4
Zhub	32.1	56.4	0.5	32.3	56.7	2.3
Chagai	28.2	55.2	1.4	27.0	49.4	0.2
Kalat Division	30.0	55.1	1.3	29.6	52.6	2.6
Kalat	32.3	59.1	0.7	32.0	56.4	2.5
Mekran	28.8	52.7	3.0	25.4	45.4	2.9
Kharan	21.5	39.9	0.4	24.9	45.4	1.7
Karachi Division	33.8	57.4	2.5	33.3	56.4	3.1
Karachi	33.7	57.2	2.2	33.4	56.3	3.1
Lasbela	34.2	60.3	5.2	32.7	58.9	3.3
Bangladesh	30.7	54.2	5.0	33.2	54.3	10.4
Rajshahi Division	29.1	53.1	2.9	30.2	55.0	3.8
Dinajpur	30.2	53.9	3.2	33.5	58.3	5.8
Rangpur	29.5	53.6	2.7	32.0	55.6	6.6
Bogra	27.7	51.3	2.4	28.8	55.2	1.2
Rajshahi	29.6	53.5	4.2	28.7	54.0	2.2
Pabna	27.9	52.3	1.7	26.9	51.4	1.0
Khulna Division	29.3	54.9	1.2	28.7	53.8	1.7
Kushtia	25.9	47.2	2.6	30.1	55.1	2.8
Jessore	30.1	56.5	1.2	29.4	54.1	2.5
Khulna	30.2	57.1	0.9	29.8	55.4	1.7
Barisal	29.2	54.8	1.2	27.3	52.4	0.9
Dacca Division	31.7	54.7	6.3	32.6	54.7	8.7
Mymensingh	32.2	54.6	7.3	37.2	56.4	16.6
Dacca	33.0	55.1	8.4	28.9	52.8	2.4
Faridpur	28.7	54.3	1.3	28.3	54.2	1.2
Chittagong Division	32.0	54.0	7.9	39.6	53.6	24.6
Sylhet	35.2	55.9	12.5	36.2	55.1	15.8
Comilla	30.0	53.8	4.4	44.8	52.5	36.8
Noakhali	29.2	49.2	7.1	36.2	51.1	20.9
Chittagong	33.9	55.8	8.9	36.8	54.5	17.0
Chittagong Hill Tracts	32.4	57.9	3.1	53.7	61.0	44.7

Sources: *Population Census of Pakistan, 1961* Vol. 2 and Vol. 3, Tables 11 and 45; *Census Bulletin No. 5, Table 3.*

The above patterns are verified by Table II-5 which furnishes different measures of partition for the crude activity rates, calculated by arraying the district rates in ascending order in the two countries. This table reports the dimensions of the regional variability in terms of the "relative dispersion," calculated as the ratio of the interquartile range to the median. Constancy in average level and a marked convergence of male participation are evidenced by almost constant median values and very low relative dispersion values (substantially below 0.1 for both the census dates) in both countries. The absolute cross-section variations are, however, substantial. These lay the ground for quantitative estimates of different determinants of male activity rates in Appendix C.

In contrast, relative dispersion values in case of females are stupendous especially in Bangladesh—in 1961 interquartile range was more than five times larger than the median activity rate. The jump in female activity rate over 1951—1961 period was not uniformly distributed among districts rather it was concentrated in a few districts. Value of third quartile rose from 2.8 to 7.5 in Pakistan and from 7.2 to 16.8 in Bangladesh during the intercensal decade. It is also obvious from Table II-5 that the substantially higher overall female activity level in Bangladesh as compared to Pakistan is largely due to relatively very high rates in a few districts of the former.

A Word about Refined Activity Rates

Because of the effects of age structure on labour force size (at least for males), comparisons of crude activity rates will not reflect true variations when the age distribution varies across districts. To avoid distortions on this account, refined activity rates (here percentages of population 12 years and over in labour force) are calculated. The refined activity rate is a "true" rate in the sense that it refers to the population at risk of participating in economic activity; although the question may arise as to why people 60 or 65 years old and over are not excluded as a significant proportion of them may be dependents. While this may be true in the developed countries, in most of the developing ones the proportion of people 60 or 65 and over, particularly males, in the labour force is pronounced enough to justify their inclusion in the population at risk.²⁶

Refined activity rates by district are given in Table II-6. Comparison of Tables II-4 and II-6 shows that the cross-sectional patterns of refined rates within a census year are not too different from the corresponding ones for crude activity rates. In fact, for regional analysis, the set of crude activity rates is an adequate substitute for the set of refined rates and *vice versa*.

In the comparisons of the 1951 and 1961 situations, the patterns given by the crude rates are, however, significantly different in meaning from those shown by the refined rates. The 1961 male refined activity rates, in particular, were very different from those of 1951, in contrast to the temporal stability in the crude rates. Table II-6 indicates a substantial expansion in the refined activity rates for most of the districts over the intercensal decade. For a large number of districts this increase

²⁶For international comparisons of age specific male activity rates see U.N., *op. cit.* (1962), Table A-2.

Table II-5

Partition Values and Measures of Dispersion of Crude Activity Rates by Sex and District, 1951—1961

Partition Lines	Pakistan				Bangladesh			
	1951		1961		1951		1961	
	Males	Females	Males	Females	Males	Females	Males	Females
Median	55.9	1.4	54.8	4.6	54.3	3.1	54.5	2.8
Lowest	46.4	0.1	44.1	0.2	47.2	0.9	51.1	0.9
First quartile	53.7	0.5	52.3	2.5	52.9	1.5	52.7	1.5
Third quartile	57.4	2.8	55.9	7.5	55.8	7.2	55.5	16.8
Highest	60.9	20.8	58.9	26.5	57.9	12.5	61.0	44.7
Range (highest-lowest)	14.5	20.7	14.8	26.3	10.7	11.6	9.9	43.6
Interquartile range	3.7	2.3	3.6	5.0	2.9	5.7	2.8	15.3
Ratio of interquartile range to median	0.066	1.643	0.066	1.087	0.053	1.849	0.051	5.464

Sources: Table II-4.

was as much as 5 to 10 points. This, however, seems largely due to erroneous age misreporting, which perhaps affected the reporting of both age-specific activity rates and age composition. For example, note the changes in the age composition, as portrayed by the following table of percentages of total population reported in the three youngest age groups. Normally as a demographic rule, such changes in the age structure come only in successive decades, not within one. The changes attributable to demographic factors for the 1951-1961 decade apparently could not produce such a pattern.²⁹

Percentage of total population in age group

	0—9	10—14	15—19
Pakistan			
1951	26.9	16.4	12.1
1961	32.8	9.7	9.0
Bangladesh			
1951	29.5	12.6	10.0
1961	37.0	9.1	7.7

Sources: Population Census of Pakistan, 1961, Census Bulletin No. 3, Statement No. 3.

Table II-6

Refined Activity Rates in 1951 and 1961 (adjusted) by Sex and District

Country, Division and District	1951			1961 (adjusted)		
	Both sexes	Males	Females	Both sexes	Males	Females
Pakistan	44.9	79.4	3.1	50.0	83.9	9.6
Peshawar Division	46.2	76.0	12.1	48.7	84.0	10.0
Hazara	46.3	77.7	12.1	52.5	86.4	17.8
Mardan	51.7	70.5	30.7	46.5	86.8	2.6
Peshawar	44.3	78.4	1.9	46.6	82.5	3.7
Kohat	39.5	75.0	1.9	49.6	76.4	23.3
Dera Ismail Khan Division	48.2	86.7	2.0	48.0	82.8	6.7
Dera Ismail Khan	48.6	88.0	2.1	48.9	81.8	8.8
Bannu	48.0	85.9	1.9	47.2	83.9	4.8
Rawalpindi Division	44.9	80.0	4.9	48.2	78.9	15.2
Campbellpur	47.2	85.9	4.4	54.5	82.5	26.0
Rawalpindi	44.8	79.0	3.6	45.5	74.6	13.4
Jhelum	43.2	77.7	7.4	44.1	76.9	10.8
Gujrat	44.5	78.4	4.7	49.0	81.6	12.7

²⁹For an exhaustive evaluation of the quality of age reporting in Pakistani censuses, see Sultan S. Hashmi, *Main Features of the Demographic Conditions in Pakistan* (Karachi: Central Statistical Office, 1963), pp. 49-70.

Sargodha Division	44.8	81.6	2.1	50.2	86.0	8.3
Sargodha	47.3	83.5	5.3	52.1	86.0	12.2
Mianwali	46.7	84.9	5.9	50.3	85.5	10.2
Lyalpur	43.3	79.9	0.2	48.8	85.3	6.2
Jhang	44.2	81.2	0.2	51.0	88.0	6.9
Lahore Division	40.9	72.8	2.1	46.1	81.6	3.8
Lahore	40.8	73.1	0.4	46.0	79.1	3.8
Gujranwala	39.7	67.8	5.0	46.9	83.5	3.8
Sheikhupura	45.3	81.4	1.5	48.2	86.2	3.9
Sialkot	39.5	70.8	2.6	44.2	80.9	3.5
Multan Division	42.4	77.1	1.1	51.6	86.6	10.0
Dera Ghazi Khan	43.9	80.2	0.4	57.5	88.4	20.6
Muzaffargarh	44.3	80.6	2.2	53.4	88.0	12.0
Multan	45.5	82.1	2.0	51.0	85.6	9.2
Sahiwal	38.2	70.0	0.3	49.5	86.5	6.4
Bahawalpur Division	42.3	77.6	—	52.8	86.0	12.3
Bahawalpur	—	—	—	51.6	85.4	10.2
Bahawalnagar	—	—	—	50.9	87.0	8.0
Rahimyar Khan	—	—	—	55.3	85.7	17.5
Khairpur Division ^a	50.1	86.2	3.5	55.7	85.1	19.4
Jaccobabad	51.6	85.2	6.5	68.6	88.7	43.1
Sukkur	50.6	86.5	4.2	51.5	82.4	12.9
Larkana	49.8	87.2	3.3	58.1	84.1	27.6
Nawabshah ^a	49.6	86.2	2.6	51.6	87.4	7.5
Khairpur	49.1	85.6	0.6	51.9	83.9	10.9
Hyderabad Division	50.7	87.8	1.7	50.8	83.4	9.8
Hyderabad	49.5	86.4	1.4	47.4	80.8	4.1
Dadu	52.5	88.8	3.7	48.2	81.2	7.5
Tharparkar ^b	50.9	87.8	1.6	57.4	85.9	22.3
Sanghar ^c	50.8	88.4	0.8	52.6	85.6	10.7
Thatta	51.2	90.0	1.0	49.1	88.5	6.4
Quetta Division	49.3	83.0	1.0	49.0	82.9	2.1
Quetta/Pishin	46.9	73.8	1.4	45.6	74.4	1.6
Sibi	50.6	89.3	0.5	51.8	91.0	3.4
Loralai	49.9	88.0	0.4	52.4	92.8	0.7
Zhob	51.9	87.5	0.9	53.4	89.6	4.1
Chagai	48.7	86.1	2.5	46.6	81.9	0.3

—Continued

Country, Division and District	1951			1961 (adjusted)		
	Both sexes	Males	Females	Both sexes	Males	Females
Kalat Division	46.7	84.0	2.1	48.1	84.7	4.2
Kalat	49.0	88.2	1.0	51.0	88.7	4.1
Mekran	46.2	83.4	4.9	42.4	76.2	4.9
Kharan	35.2	62.4	0.7	42.9	78.5	2.9
Karachi Division	50.9	82.1	4.0	51.0	82.7	5.1
Karachi	50.8	81.5	3.7	50.9	82.3	5.1
Lasbela	52.3	90.2	8.2	52.7	94.0	5.3
Bangladesh	46.2	80.4	7.6	55.9	90.2	17.8
Rajshahi Division	43.7	78.5	4.5	51.2	92.0	6.5
Dinajpur	45.4	79.3	4.8	55.1	93.6	9.8
Rangpur	44.1	78.7	4.1	54.8	93.5	11.5
Bogra	41.1	75.1	3.7	48.1	91.3	2.0
Rajshahi	44.2	79.4	6.4	48.3	90.3	3.7
Pabna	42.8	79.2	2.6	47.2	89.4	1.8
Khulna Division	44.3	81.3	1.9	48.5	89.2	2.9
Kushtia	38.3	69.1	3.9	51.1	92.1	4.9
Jessore	44.9	83.2	1.8	49.5	89.9	4.3
Khulna	44.9	85.1	1.4	49.1	88.6	2.9
Barisal	44.5	81.3	1.8	46.9	88.4	1.6
Dacca Division	47.2	80.5	9.6	55.2	91.0	15.0
Mymensingh	47.2	79.3	10.9	63.0	93.8	28.5
Dacca	49.3	81.3	12.7	48.8	87.0	4.2
Faridpur	43.9	81.6	2.0	48.2	91.5	2.1
Chittagong Division	48.7	81.1	12.2	66.0	88.4	41.5
Sylhet	53.6	83.6	19.4	59.1	88.8	26.3
Comilla	46.0	81.8	6.9	76.6	89.2	63.2
Noakhali	44.9	74.5	11.1	61.8	88.2	35.3
Chittagong	50.3	82.0	13.3	60.0	86.5	28.5
Chittagong Hill Tracts	49.0	85.8	4.8	84.8	92.2	74.8

Sources: Same as Table II-4.

^a1951 data for both Nawabshah district and Khairpur division are adjusted for Shahadpur and Sinjhoru Talukas of Nawabshah district, which were transferred to Sanghar district in 1961.

^bData for 1951 for Tharparkar district are adjusted for Sanghar and Khipro Talukas transferred to Sanghar district in 1961. Data for Hyderabad division are adjusted for newly created district of Sanghar.

^cAge data for 1951 are estimated.

Hence crude rates are closer to their true rates than are refined ones and it is preferable to use them in intercensal comparisons of labour force activity. But if age misreporting is fairly consistent across regions *within* a census year, the regional patterns of reported refined rates will be similar to those of true refined rates and hence give a relevant picture of regional variability for that year. In the aggregate model of labour force in Appendix C, both crude and refined activity rates by district are used as observations on the dependant variable.

Female Labour Force Participation

Usually women are treated as a special group in manpower studies. They encounter special problems rooted in social values and cultural traditions which adjust with varying degrees and in different directions in response to social and economic development. This is reflected in the extreme variability of female economic activity rates across countries. The male activity rates vary between 50 and 60 percent in most countries; the female rates range from less than 5 to more than 50 percent.³⁰

The influence of cultural traditions on the reporting of female labour force participation is specially evident in case of Pakistan and Bangladesh. Remarkably low female activity rates were reported throughout the 1901-1961 period. Supposedly these stemmed from the social institution of "purdah" (veiling of women), which calls for the seclusion of women from males other than family members.

In 1961 Census, only 9.6 percent of women 15 years and over in Pakistan and 17.8 percent in Bangladesh were reported to be in the labour force. These rates are low when compared with the average rates for different zones and particularly to that of Asia (see Table II-7). Such international comparisons of female activity rates,

Table II-7
Average Percentage of Female Population 15 Years and Over in Economic Activity by Region

Region	Number of countries	Average percentage	Standard deviation (percentage)
Africa	18	36.3	18.0
Non-Muslim African Countries	14	37.1	15.8
America	26	29.7	14.6
Asia	24	34.2	22.2
Non-Muslim Asian Countries	15	40.8	20.2
Europe	23	35.6	14.0
Oceania	11	28.1	16.6
Muslim countries*	13	23.3	20.0

Note: This table is reproduced from Lee L. Bean, "Utilization of human resources: the case of women in Pakistan" *International Labour Review*, Vol. 97, No. 4, 1968.

*Countries included here are: Brunei, Indonesia, Iran, Iraq, Jordan, Malaysia, Morocco, former Pakistan, Sudan, Syria, Tunisia, Turkey and U.A.R.

³⁰U.N., *op. cit.* (1965), Table 8.

however, should be interpreted with caution. More than in the case of males, different definitions, biases and census errors and, particularly, different practices and customs, obscure and falsify the pattern and especially the level of female activity rates. Table II-7, which uses activity rates for female population 15 years and over, eliminates at least the differences arising from different minimum age limits for economic reporting (the highest minimum age limit for labour force enumeration in any country is 15 years).

Table II-7 reveals that the average female activity rate for Muslim countries is also low. Deleting the Muslim countries of Asia increases the average percentage by 6.6 points for the zone. Among the 24 countries of Asia included in Table II-7, former Pakistan is ranked 20th and the four countries with lower rates, namely Iran, Iraq, Jordan and Syria are also Muslim countries. Even after accounting for comparatively unfavourable age structures in these countries, the activity rates remain significantly low.

Several researchers have attributed these low levels of female contribution to economic activity in Muslim societies to the religious attitudes on the rôle of women.³¹ It is generally contended that there is a negative correlation between Muslim values and female labour force participation. Below we attempt to judge the validity of this contention, from here on referred to as the *Hypothesis of Islamism*.

Questioning the Validity of the Hypothesis of Islamism

A series of arguments can be advanced against this hypothesis:

(1) Because of the aggregation problem involved in the computation of average female activity rates, Table II-7 fails to reveal the fact that many Muslim countries have reported substantial female labour force participation. For example, in Turkey, 39.5 percent of total female population is reported in the labour force: in Algeria (Muslim population only), 25.2 percent; in Morocco (Muslim population only), 24.5 percent; in Tunisia, 21.2 percent; in Indonesia, 19.6 percent; and in former Malaya (now West Malaysia), 17.4 percent.³² Sudan reported 40.5 percent of the female population 15 years and over in economic activity.³³ The example of the southern provinces of Thailand is especially relevant; although the majority of the population are Muslims these regions have similar female activity rates to those of the other provinces where the majority of the population are non-Muslims.³⁴ And the Thai female crude activity rate of 51.1 percent in 1960 is one of the highest reported

³¹Lee L. Bean, "Utilization of human resources: the case of women in Pakistan," *International Labour Review*, Vol. 97, No. 4, 1968, pp. 391-410; C.E.V. Leser, "Trends in Women's Work Participation," *Population Studies*, Vol. XII, No. 2, November 1958, pp. 100-110; Ettore Denti, "Sex-age patterns of labour force participation by urban and rural populations," *International Labour Review*, Vol. 98, No. 6, December 1968; R.A. Karwanski, *Projection of Labour Force for Pakistan and Provinces, 1960-1990* (Islamabad: ILO/UNDP Manpower Planning Project, 1969), pp. 20-31.

³²U.N., *op. cit.*, (1965), Table 8; U.N., *op. cit.*, (1962), Table 1.

The figure for West Malaysia (1957) here excludes Singapore, Sabah and Sarawak. Muslims comprise one-half of the population in West Malaysia.

³³U.N., Department of Economic and Social Affairs, *Population Growth and Manpower in the Sudan*. Population Studies, No. 37 (New York, 1964), Table 1, p. 59. However, there is a cause for skepticism about the Sudan data. There was unusual treatment of women with dual status. *Ibid.*, pp. 57-62.

³⁴Y.C. Yu, *The Development of the Economically Active Population in East Asia, 1947-1966* (Unpublished Ph.D. Dissertation, University of Pennsylvania, 1969), p. 12.

in the world. Also, in the case of Bangladesh, the activity rate for Muslim females (17.1 percent for population 10 and over) is almost identical to that for non-Muslims (18.7 percent) and is significantly higher than the rate for Muslim females in Pakistan (9 percent).³⁵

(2) Advocates of the hypothesis of Islamism may explain such examples in terms of (i) the existence of large non-Muslim segments of population and/or (ii) favourable influence of non-Muslim minorities on Muslim women's propensity to participate in economic activity.

The first factor is overshadowed by the fact that, although some of the above Muslim countries have large non-Muslim populations, these are not large enough to account for such high rates. In Malaysia, for example, the activity rate for the female Malayan population (10 years and over), mainly Muslims, was 23.2 percent as compared to 25.0 percent for all races³⁶

The second facet of the explanation can be easily contradicted in the cases of Algeria and Morocco, where Muslim female activity rates are higher than those of non-indigenous population of Europeans and Jews. Also, in the pre-independence Indo-Pakistani sub-continent, sizeable non-Muslim communities, mainly Hindus, were living in the present areas of Pakistan and Bangladesh, particularly in the latter.³⁷ But still the female rates were observed to be very low in these areas. (The historical patterns of activity rates in modern India³⁸ indicate that the Hindu female activity rates were generally substantial). This is an illustration of the presence of large non-Muslim minorities *not* resulting in a high propensity of Muslim women to participate in economic activity.

(3) Conversely, there are many examples of non-Muslim countries with low female activity rates as evidenced in Table II-8. These rates are comparable with the rate for, at least, Bangladesh Muslim women. Except for Singapore, all the countries in Table II-8 are mainly Catholic. Are these low activity rates due to Catholic religious values? Perhaps not, as there are many other Catholic countries like Bolivia, Ireland, France, and Austria with high activity rates.

³⁵Bean attributes the higher Muslim female activity rate in Bangladesh partly to the higher educational level there. This is not completely true as a study has shown higher functional literacy in Pakistan than in Bangladesh. Jamila Akhtar, "Literacy and education: Fifth Release from the 1961 Census of Pakistan," *The Pakistan Development Review*, Vol. III, No. 3, Autumn 1963, pp. 428-432.

³⁶G.W. Jones, "Female Participation in the Labour Force in a Plural Economy, the Malayan Example," *The Malayan Economic Review*, Vol. X, No. 2, 1965, Table 2.

In three states of West Malaysia, viz., Kedah, Perlis and Kelantan with dominant proportion of Muslim population (68, 74 and 94 percent, respectively), crude female activity rates were respectively, 19, 21 and 25 percent. Y.C. Yu, *op. cit.*, pp. 154-155.

³⁷In Bangladesh, the non-Muslims constituted more than 30 percent of the total population from 1901 to 1931. Hindus were more than 95.5 percent of the non-Muslim population. In Pakistan, the corresponding non-Muslim proportion was more than one-fifth, with Hindus constituting more than two-thirds of this. Office of the Census Commissioner *op. cit.*, (1961), Vol. 1, Statements 2.19-2.20.

³⁸B.R. Kalra, "A Note on Working Force Estimates 1901-1961," Census of India, 1961, *Final Population Totals of 1962*, Paper No. 1. (Delhi: The Manager, Government of India Press), pp. 389-413.

³⁹U.N., *op. cit.*, (1962), p. 10.

An Alternative Explanation of the Low Female Labour Force Participation

The following may be a better explanation than different religious values for the low female labour force participation in the above countries:

(1) There are strong reasons to believe that the female activity rates reported in Pakistan, Bangladesh, and in most other Muslim and non-Muslim countries where the rates are very low are not true rates. For example, in former Pakistan, the accuracy of census statistics on economically active females in 1951 can be assessed by studying the relationship between the reported numbers of female unpaid family workers and self-employed males in the agricultural sector. It is hypothesized that,

in countries where the proportion of men who are employers or own-account workers (self-employed) in agriculture is high, the number of female unpaid family workers in agriculture should also be high.⁴⁰

Since 87.9 percent of male agricultural workers were self employed,⁴⁰ of the total female workers (the majority of whom were in agriculture) the reporting of only 28 percent as unpaid family workers⁴¹ suggests inaccurate reporting of female economic activity, even after accounting for the limitations of the above hypothesis. The importance of unpaid family workers in total female labour force in a developing economy can be judged from the example of Turkey. The 1955 crude activity rate for females slides from 40.3 to 4.2 percent if female unpaid family workers are excluded. The corresponding rate for former Pakistan is 3.7 and this is not very different from that of Turkey.

As mentioned before, the change in definition of labour force in the 1961 census provided for a comparatively better coverage of female unpaid family workers, increasing the female activity rate to 6 percent from 2.1 in 1951 for Pakistan and to 10.4 percent from 5 for Bangladesh. But the 1961 census instruction still seem to encourage the enumerator not to report unpaid family work. It was stated that

Women, in a predominantly agrarian economy besides doing normal household duties, help their families in a number of jobs, such as up-keep of cattle specially the milk cattle, making of milk products for household uses as well as for sale, grain husking and making of gur on a small scale in the household. Such workers were to be classified at the enumeration stage as "women doing household-work only" or as "dependents". Otherwise it will create an apparent inflation of the labour force figures.⁴²

Such instructions, if taken too literally by the enumerators, could negate any positive influence of the change in definition. Thus it is not too surprising to find 5 districts in Bangladesh and 4 districts in Pakistan reporting lower female activity rates in 1961 than in 1951 (Table II-4). The most noticeable decline during this

⁴⁰U.S., Department of Labour, *Labour Development Abroad* (Washington: Bureau of Labour Statistics), p. 21.

⁴¹This figure is reported by the Pakistan, Ministry of Labour, *Manpower Survey Report, 1955* (Karachi: Department of Manpower and Employment). The 1951 census did not report unpaid family workers in agricultural labour force.

⁴²Office of the Census Commissioner, *op. cit.* (1961), Vol. 1, pp. V-5 to V-7.

intercensal decade was reported for Mardan District in Peshawar Division—from 20.8 percent to only 1.6 percent. In this particular area no economic or social change took place which could cause such an exorbitant decline. Even casual observation will show that by adopting the usual criterion of 15 hours or more of work per week other than household for unpaid family work, higher female economic activity would have been reported in the rural areas.

Table II-8

Countries with Low Female Crude Activity Rates

Region/Country	Year	Crude activity rate
<i>Middle America</i>		
Honduras	1961	7.7
Cuba	1953	9.0
Guatemala	1950	9.0
Mexico	1950	8.7
	1960	11.6
Nicaragua	1950	8.6
	1963	12.5
Costa Rica	1963	9.6
El Salvador	1961	11.5
Dominican Republic	1950	12.3
<i>South America</i>		
Brazil	1950	9.6
Ecuador	1962	11.8
Venezuela	1950	12.2
	1961	12.1
<i>Other</i>		
Mauritius	1962	9.8
Spain	1950	11.8
Puerto Rico	1960	12.2
Portugal	1960	13.1
Singapore	1957	12.7
Greece	1951	13.1

Sources: U.N., *Demographic Yearbook*, 1964, Table i,
U.N., *Demographic Aspects of Manpower*, Appendix Table 1.

The exorbitant regional differences in the female activity rates at both the division and district levels in 1961 (Table II-4) suggest investigating the consistency of the application of the census concepts and the relative qualities of both enumeration and response in different regions, although the resulting pattern of regional

variability cannot be ruled out.⁴³ The activity rate varied from 1.2 percent in Quetta Division in Pakistan to 24.6 percent in Chittagong Division in Bangladesh with Chittagong Hill Tracts District in the latter division reporting a rate of 44.7 percent. Prominent examples of under-reporting are the districts of Chagai, Loralai, Barisal, Quetta/Pishin and Pabna, with activity rates of 0.2, 0.4, 0.9, 1.0 and 1.0 percent, respectively. It can safely be asserted that these differences are exaggerated and are largely the product of the extent of coverage of unpaid family work in each district.

The above discussion thus shows that aggregate rates provide a weak basis for inferences about effects of religion on female participation in the labour force. A better approach would be to investigate the regional patterns of activity rates in different countries, and preferably to have these divided among different religious groups in each country.

(2) Argument (1) can be taken as a substitute for the above hypothesis in the explanation of low female activity rates in the rural agricultural sector. Following is an explanation for urban areas.

Generally, in Muslim countries like Pakistan and Bangladesh, urban female activity rates are lower than rural ones.⁴⁴ (The argument here is restricted to Muslim countries.⁴⁵) Female reporting is usually taken to be relatively more accurate in urban areas (although we cannot rule out the possibility of considerable under-reporting, if not of the same magnitude as in the rural areas). Here the Hypothesis of Islamism may be more relevant. The "purdah" system does seclude the female member of the family from the mixed society of urban areas and hence from the labour force; though generally, the very low urban female economic activity seems to be an Asian-African pattern, not peculiar to Islam.

However, it is possible that low urban female activity rates are a reflection of how little the traditional division of functions between women as home-makers and men as bread-winners (here referred to as "traditionalism")⁴⁶ has been altered.⁴⁷ And one can argue that traditionalism may be further strengthened by strong religious beliefs but may be modified by social and economic advancement.

⁴³The variation in land tenure system, average farm size, type of crops and extent of mechanization across regions may affect the extent of female activity. For example, in a district with peasant form of farming, with double or treble cropping in a year, and a crop involving substantial labour input the probability of female participation in labour activity is greater. However, in view of the general peasant-type farming, small farm size, and little mechanization, such factors do not explain in its entirety the exorbitant regional variability.

⁴⁴E. Denti, *op. cit.*, pp. 546-550.

⁴⁵In Latin American countries, most of which are in Table II-8 the situation is just the opposite: the rural rates are comparatively depressed. Besides the negative attitude towards the women engaging in economic activity, Denti adds:

It may be well that women do in fact participate in rural areas to the same degree as in urban areas or even a greater degree, but this participation is less visible since it occurs in the non-wage sector and in family-owned and family-operated undertakings. *Ibid.*, p. 550.

⁴⁶In some societies such as Africa south of the Sahara, traditional division of functions will support high female participation in economic activity. Marie Helene Le Fauchaux, "The contribution of women to the economic and social development of African countries," *International Labour Review*, July 1962.

⁴⁷A well thought-out paper on the degree of traditionalism and extent of female participation in social labour is by K.G. Ilyina, "The participation of women in economic activities in the Soviet Union," U.N., Department of Economic and Social Affairs, *World Population Conference*, 1965, Vol. IV (New York, 1967), pp. 301-306.

(3) The following two factors are also relevant for the explanation of low female labour activity in urban areas:

- (i) With relatively lower educational attainment and a general lack of adequate vocational training,⁴⁰ females have a comparative disadvantage in the labour market.
- (ii) Given a pronounced degree of unemployment and underemployment, which is a dominant characteristic of urban areas in developing countries, the men may force the women out of jobs which are customarily female ones in economically advanced societies such as secretaries, typists and nurses. Such competition for jobs, leading to a perhaps justified belief that "jobs are not available", results in a lower reporting of female economic activity as women will not even report themselves as looking for jobs (known as "discouraged-worker" effect).

Conclusion

The low female labour force participation in the two countries is not a result of the dominance of Islamism. Rural female activity is to a large extent under-reported. Even in the urban areas it may rather be "traditionalism" than religion *per se* which leads to lower reporting and/or lower female labour activity. Lack of adequate education, vocational training and suitable jobs also contributes to lower urban activity rates.

Two policy implications can be drawn from the above findings. First, that the former Pakistan Perspective Development Plan 1965-85 underestimated the number of jobs to be provided in order to reach the full employment target by 1985. The plan apparently used the female activity rates reported in the 1961 census, which the above analysis shows to be too low, as the basis for its projection of the female labour force size for the plan period. Second, though at present women in urban areas may in fact be largely outside economic activity, with increasing education and economic development, the urban female participation in economic activity may expand, particularly if the present sex-segregated education facilities and the convention of medical treatment of women being limited to women medical practitioners continues. The present development plans in the two countries should then be consistent between exploitation of this additional labour supply (if it is so desired) and the objective of providing full employment, especially for male labour force participants.

⁴⁰For Pakistan, see Office of the Census Commissioner, *op. cit.*, (1961), Vol. 1, Table 35.

SOME SPECIFIC DIMENSIONAL ASPECTS OF LABOUR FORCE ACTIVITY

The participation in labour activity is influenced by, among other factors, age, education, marital status and the degree of family responsibility, level of income, place of residence (rural or urban) and; in this connection, the structural composition of the economy. From the preceding discussions we can infer greater variation in activity for women than for men, reflecting the complexity of these determinants for women. From the literature on manpower and from the findings below, a very safe hypothesis can be established; that "a man's choice between labour force participation and non-labour activity is limited to only the young and old phases of his life span." And, again, this choice seems to be related basically to the level of social and economic development of the society.¹

A study of the above mentioned factors is essential for a more comprehensive understanding of the dynamics of a nation's labour force. The focus here will be only on the 1961 situation due to limitations of data for the other census year. We attempt to bring out the relative importance of a few of the more significant variables. In Appendix C, we introduce an estimation model dealing with a wide array of factors determining the dimensions of labour force.

Sex-Age Specific Activity Rates

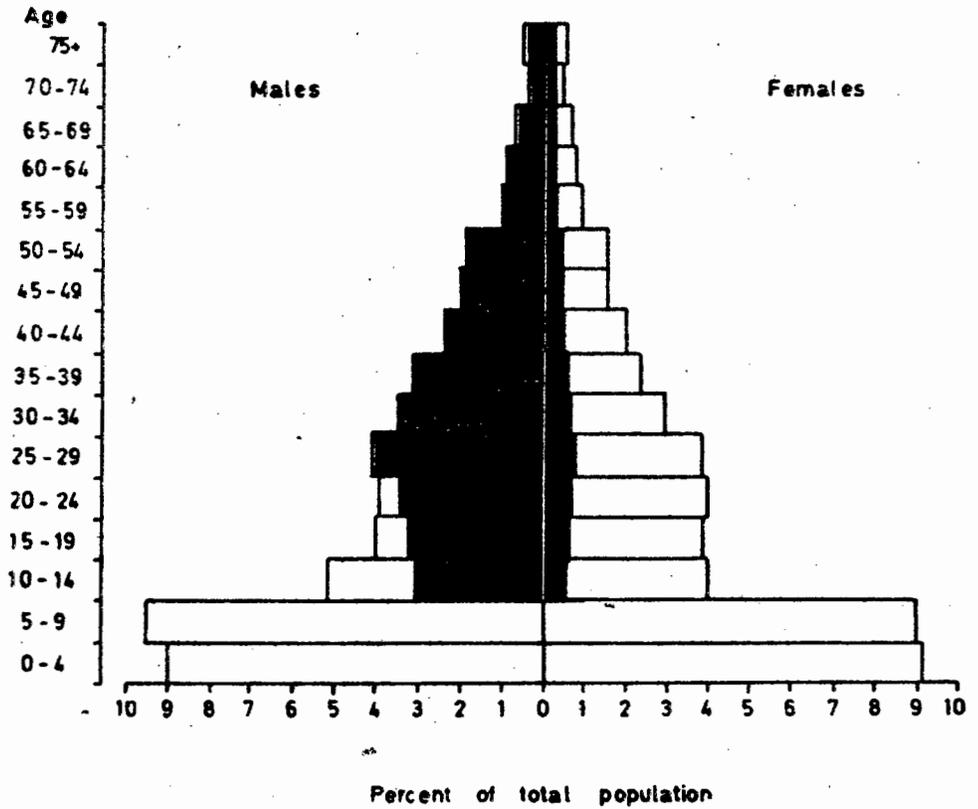
Figure III-1 pictures the population age pyramid and the relative contributions of each age-sex group to the labour force² for Bangladesh. The corresponding

¹For detailed discussions of the factors affecting labour force participation, see Jan L. Sadie, "Statement by the Moderator: Demographic aspects of labour supply and employment," U.N., Department of Economic and Social Affairs, *World Population Conference*, 1965, Vol. 1 (New York, 1966), pp. 219-230; K.J. Penniment, "The influence of cultural and socio-economic factors on labour force participation rates," *World Population Conference*, 1965, Vol. IV (New York, 1966), pp. 318-321; G. Bancroft, *The American Labour Force: Its Growth and Changing Composition* (New York: John Wiley and Sons, 1958), pp. 21-22.

²Quinquennial age distributions estimated by Bean *et al.*, were used for the age pyramid in Figure III-1. Lee L. Bean, *et al.*, *Population Projections for Pakistan: 1960-2000*. Monographs in the Economics of Development No. 17 (Karachi: Pakistan Institute of Development Economics, 1968).

The labour force data are reported by 5 years age groups for ages 10-24, by 10 years for 25-54 and lumped for 60 years and over. For males we used the quinquennial participation rates estimated by Lee L. Bean, "Provisional Estimates of the Length of Working Life in Pakistan," *The Pakistan Development Review*, Vol. VII, No. 2, Summer 1967. No such estimation was available for females. Using linear interpolation, we estimated female quinquennial activity rates for ages 25-54. And applying graphic extrapolation, the rates were estimated for age groups 60-64, 65-69, 70-74 and 75 years and over. These were checked and adjusted by applying them to 1961 census population of age 60 years and over.

Figure III 1: Population and Labor Force by age and Sex, 1961 Bangladesh



Labor force
 Not in labor force

pyramid for Pakistan is quite similar. The figure depicts a very close relationship between age and male contribution to the labour force. This stems basically from the social law that assigns to the men the role as "bread winners" in the adult age span of 20 to 60 or 65 years.³ The figure also shows a low female contribution at each age. In the following two sections, we analyze male and female age-specific activity rates, separately, in the international context.

Male Age Specific Activity Rates

Being independent of population age structure, the age-specific activity rates provide a better measure of labour activity than do crude or even refined activity rates, and so are more appropriate for regional and international comparisons.

A definite pattern of male age-specific activity rates is discernable in Table III-1 and Figure III-2, which provide rates for Pakistan and Bangladesh and average rates for countries classified according to the level of industrialization.⁴ The work rate increases from the young age group 10-14 to the age of 25 years, tapers off at a constant high level, where almost every male is in the labour force, until the age of 55 years and then declines progressively.

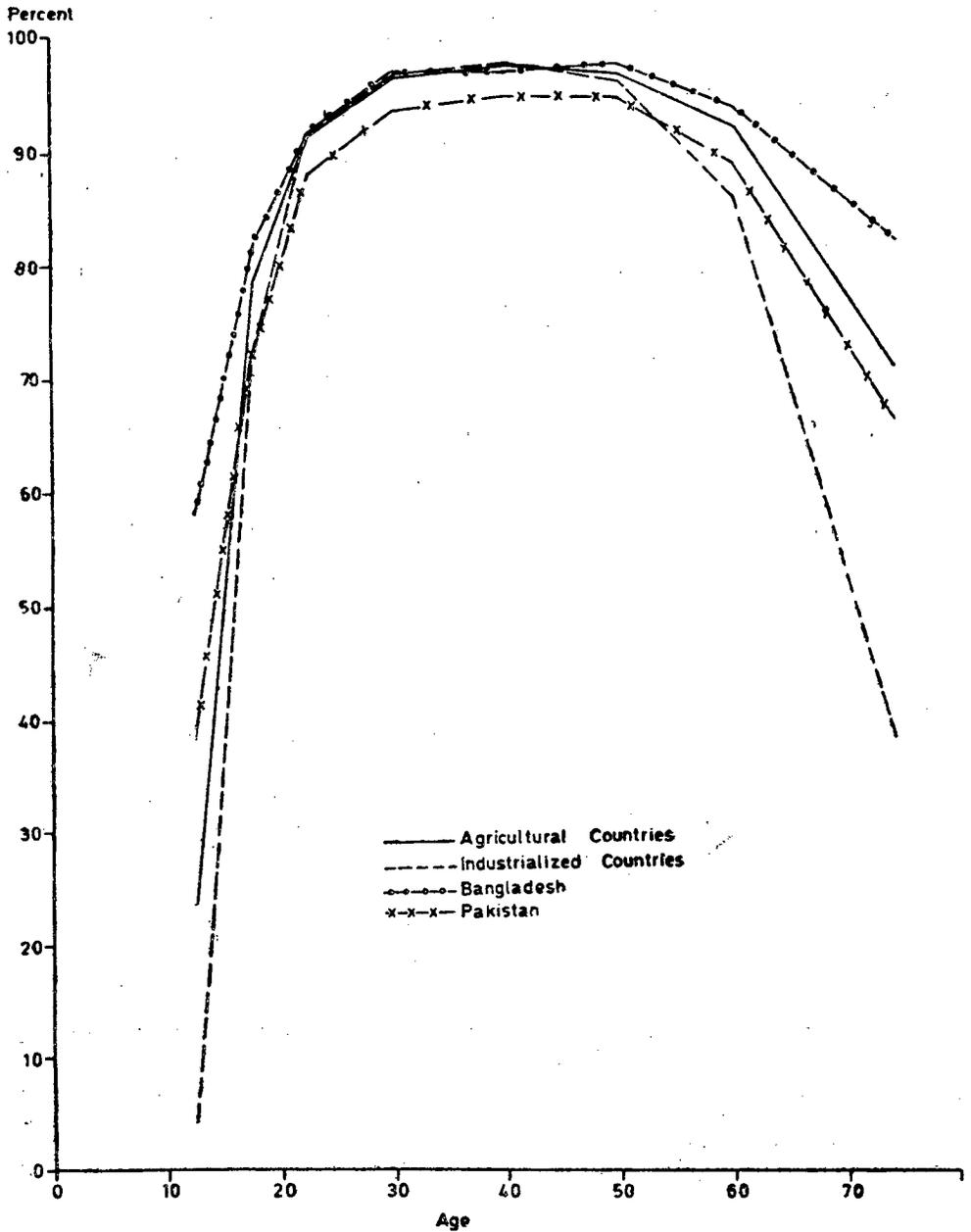
Varying the degree of industrialization does not influence activity rates in the middle age span of 20-54 years but does seem related to very distinguishable differences occurring in the young age group of under 15 years and the older age group of 65 and over. There are some differences, though not very marked, in the adjacent age groups of 15-19 and 55-64 years. Agricultural countries including Bangladesh report appreciably higher labour force participation rates for these age groups than do the industrialized countries, with semi-industrialized ones like Pakistan in an intermediate position. The reasons for this are documented below.

It is relatively easy for agricultural work to be adapted to at a young age and to be continued at old ages. The fact that agriculture is generally a family enterprise in most of the agricultural countries relaxes the usual preconditions of education, vocational training, and age limit for a job in an industrial economy. Moreover, the seasonal nature of agricultural work and the use of primitive cultivation methods may require as many hands as possible at periods of peak activity. It is this seasonality of labour force participation which leads many economists to believe in zero or negative marginal productivity of agricultural workers in numerous developing economies. However, with agriculture in these countries being able to provide only a sub-standard and, at the most, a subsistence standard of living, men, out of necessity, have to enter into economic activity as early as possible and to work

³This social law is not absolute for ages 20-24, when some men may still be in school, and 55-59, when some may retire into inactive status (particularly the ones in government services which have a retirement age limit of 55 years).

⁴A country is categorized as "agricultural" if 60 percent or more of its active males are engaged in agriculture and related activities, "semi-industrialized" if 35-59 percent, and "industrialized" if less than 35 percent. United Nations, Department of Economic and Social Affairs, *Demographic Aspects of Manpower, Report 1. Sex and Age Patterns of Participation in Economic Activities*. Population Studies, No. 33 (New York, 1962).

Figure III-2: Average (unweighted) Male Age-Specific Activity Rates: Agricultural Countries, Industrialized Countries, Bangladesh and Pakistan



Source: Table III-1

as long as their physical ability permits.⁵ Virtual non-existence of adequate educational opportunities and of social security schemes are among other reasons usually advanced for high participation rates in these young and old age groups.

Even though these countries are primarily agrarian, the activity rates of 38.4 percent for age group 10-14 in Pakistan and, particularly, the corresponding rate of 58.1 percent for Bangladesh require explanation. Hashmi suggests several possibilities:

- (i) inadequate educational facilities; (ii) most of the population which was siphoned off from age group 10-14 to age group 5-9 was economically inactive; (iii) the tendentious underreporting of age (for example if some persons of age group 15-19 who have high participation rate were underreported in the group 10-14, they would raise the participation rate of persons in age group 10-14); and (iv) the extraordinary high rate may be a result of a combination of all these possibilities and part of it may be actual.⁶

There are at least three other countries in Asia which, according to their latest census reporting, have comparable participation rates for the young age group. In Iraq, the activity rate was 65.9 percent for the age group 5-14, in Thailand, 40.5 percent for the age group 11-14, and in Sikkim, 68.4 percent for the age group 10-14.⁷ So the high participation rates for this age group are quite plausible, particularly when seen in context of the very limited educational opportunities in Pakistan and Bangladesh.

Consistently higher age-specific activity rates in agrarian Bangladesh than in semi-industrialized Pakistan explain the larger labour activity in the former (34.2 percent of the total population in the labour force as compared to 32.4 percent in Pakistan) despite a higher masculinity ratio in the working age population and a more favourable age distribution in Pakistan. The reasons in the above paragraphs partly explain this difference.

Female Age Specific Activity Rates

The relationship between age and level of the activity rate is less simple in the case of females. Depending on marital status and, more so, on the ages of children, the woman's functional role as a home-maker or worker may switch at different stages of her life cycle. There are also social and cultural factors which may have their own strong influences on, at least, the reporting of female activity.

⁵Given the prevalence of the extended family system in former Pakistan, which usually allows early retirement of older persons in the family, the reported high participation rate further establishes the contention that the earning capacity is so low that older persons have to continue their efforts to supplement the meagre income of the family. But the participation in the labour force in old age may be nominal. Lee L. Bean, "Demographic Aspects of Potential Labour Force Growth in Pakistan," International Union for the Scientific Study of Population, *Sydney Conference, 1967, Contributed Papers* (Sydney, August 1967), p. 91.

⁶Sultan S. Hashmi, *Main Features of the Demographic Conditions in Pakistan* (Karachi: Central Statistical Office, 1963), p. 102.

⁷United Nations, Department of Economic and Social Affairs, *Demographic Yearbook, 1964*. (New York, 1965), Table 8.

Table III-1

Average Sex-Age Specific Activity Rates in Countries Classified by Degree of Industrialization and in Pakistan and Bangladesh

Age group	Pakistan	Bangladesh	Industrialized countries	Semi-industrialized countries	Agricultural countries
<i>Males</i>					
10—14	38.4	58.1	4.1	13.2	23.9
15—19	72.3	81.6	72.4	70.3	78.4
20—24	87.9	91.6	91.5	91.8	91.2
25—34	93.7	96.9	96.7	96.2	96.3
35—44	94.5	96.5	97.6	97.1	97.5
45—54	94.3	97.1	95.9	95.9	96.3
55—64	88.4	93.5	85.6	88.9	91.6
65+	65.9	81.3	37.7	61.0	70.1
<i>Females</i>					
10—14	4.7	12.8	2.4		10.2
15—19	7.6	16.8	53.6		30.9
20—24	9.6	17.5	51.9		31.5
25—34	10.6	19.2	30.3		29.9
35—44	11.7	19.2	28.3		30.6
45—54	11.8	20.5	28.1		28.9
55—64	10.3	16.5	20.8		23.7
65+	6.8	11.7	7.1		14.3

Sources: *Population Census of Pakistan, 1961, Census Bulletin No. 5, Table 3*; United Nations, *Demographic Aspects of Manpower, Table 5-1*

Table III-1 provides female age specific activity rates in Pakistan and Bangladesh and averages of corresponding rates for industrialized and agricultural countries. Rates in both countries follow somewhat similar patterns to those of males (as regards the shape of the curves, though not their level), rising from age 10 to 25, settling at a little higher rate for the age span 25-54 and starting to decline from age 55. Their pattern is shared by the averages⁸ for agricultural countries with very little variation from the late teens to about age 50 (though the level of the rates is lower at every age for Pakistan and Bangladesh). On the other hand, in the averages for industrialized countries, there is a very high teenage activity peak which is sharply reduced in the ages of marriage and family building and which declines further after age 55. More recently (figures drawn in Table III-1 were based on rates around 1950), this pattern has been modified in many industrialized countries. A second peak occurs in the age group 45-54 reflecting the tendency of women to reenter the

⁸Contrary to males, these averages for female labour participation do not represent a uniform pattern in all the countries included. There is a great deal of diversity of patterns in individual countries.

work force when the demands of child-bearing and, more importantly, child-rearing are lessened.⁹

An explanation of the above differences in the patterns of female activity in developed and developing economies is that in most of the latter,

a labour market in the sense that is known in industrialized countries is not highly developed. Much of the production is carried out in household enterprises, and changes in a woman's marital status or in her responsibilities for the care of children do not have the same implications for her continuation in employment that they have in the industrialized countries, where most economic activity is centered outside the home.¹⁰

Rural-Urban Differentials

The rural-urban division¹¹ of population is largely a function of the industrial composition of the economy; to a large extent it reflects the relative importance of agriculture and non-agricultural activities as sources of livelihood. Thus a comparison of data for rural and urban segments serves to indicate the influence of agricultural and non-agricultural activity on the propensity to participate in the labour force.

Distinct rural and urban activity patterns are discernable in Table III-2. For both countries and sexes, the rural rates are greater than the urban rates in every age group.

First discussing the male patterns; the rural-urban differentials are concentrated in the age groups below 25 and over 55, with urban rates for these groups being appreciably lower. This observation is a direct corollary of the argument in the preceding paragraphs relating the degree of industrialization with male participation in the labour force. But the rural-urban differences as well as the level of rural and urban activity rates in each age group appear to be smaller in the more developed countries than in the less developed ones.¹² In relation to this finding, although rural-urban differentials in the two countries look similar, both urban and rural rates are higher in Bangladesh. Again, the difference between the urban rates in the two countries can be partly related to the relative economic backwardness of Bangladesh, where one-seventh of the labour force in urban areas was engaged in agricultural activity as compared to 8.8 percent in Pakistan. Also, the analysis in Chapter 4 shows that the non-agricultural labour force in Bangladesh follows more traditional types of activities than that in Pakistan. For example, cottage industry (which, being largely family enterprise, allows a high participation rate) engaged almost one-fifth of the total non-agricultural labour force in Bangladesh. The corresponding

⁹E. Denti, "Sex-age patterns of labour force participation by urban and rural population," *International Labour Review*, Vol. 98, No. 6, December 1968.

¹⁰United Nations, *op. cit.*, (1962) p. 23.

¹¹According to the 1961 census definition, urban areas included Municipalities, Civil Stations and Cantonments not included within Municipal limits, and any other continuous collection of houses inhabited by 5,000 persons or more. Some places having less than 5,000 population were also treated as urban if they showed distinct urban characteristics.

¹²Denti, *op. cit.*, pp. 534-535.

proportion for Pakistan was only 3 percent.¹³ Inter-country differences in the rural rates may also partly be explained by the above reasoning. Lower male activity rates in rural Pakistan for the young and old age groups (particularly the young) seem to stem from higher non-agricultural activity in rural areas (compared to 11 percent in Bangladesh, 26 percent of the rural labour force in Pakistan was in non-agricultural sectors).

There are two observations in Table III-2 which require explanation:

- (a) The activity rate of 91.6 percent for age group 25-44 in urban Pakistan appears to be rather low. This is partly due to the fact that the majority of the armed forces of former Pakistan were stationed in the urban areas of present Pakistan. As mentioned before, armed forces are included in the population total but not in the labour force.
- (b) The urban male activity rates in age group 20-24 are quite low in both countries (81.3 percent in Pakistan and 84 percent in Bangladesh) compared to corresponding rates in industrialized countries. Partly it may be due to the armed forces in this age group. However, in case of voluntary military service, professional in nature as in former Pakistan, there may not be a concentration of the armed forces in the young age groups as may be the case with a mandatory military service. Part of the explanation for these low activity rates seems to be related to the pronounced problem of employment in the cities of developing countries. There is often a long time lag before a person searching for a job, finds one. This may particularly be true for fresh matriculates, intermediate or even degree holders who aspire to "status" jobs. Their reporting of economic activity may be affected, at least to some extent, by the same phenomenon as speculated for females, *i.e.*, if they believe that "jobs are not available" they may not even report themselves as "looking for a job." This may also partly explain the low reported unemployment rates (see Chapter 4).¹⁴ There may be another factor operating. It has often been observed that young adult males are more mobile than other components of the population¹⁵ and hence more likely to be underreported.¹⁶ If the propensity to participate in labour activity is higher for migrants than the non-migrant population, underreporting of the former will pull down the reported activity rates for this age group.

¹³Office of the Census Commissioner, Ministry of Interior, *Population Census of Pakistan, 1961, Census Bulletin No. 6. Cottage Industry, 1960*, (Karachi: Manager of Publications) Summary Table.

¹⁴For a detailed treatment of this problem, see Ghazi, M. Farooq, "Population Growth, Labour Force and Employment" in Warren C. Robinson (ed.), *Population and Development Planning* (New York: The Population Council, 1975).

¹⁵A study by Thomas has shown highest intensity of primary migration at young adult ages for males, Hope T. Eldridge and D.S. Thomas, *Population Redistribution and Economic Growth, United States, 1870-1950: Demographic Analysis and Interrelations*, Vol. III (Philadelphia: The American Philosophical Society, 1964). For net intercensal migration of males 10 years and over to the cities of Pakistan and Bangladesh, see M. Afzal, "Migration and Supply of Non-Agricultural Male Labour Force in the Cities of Pakistan, 1960," P.I.D.E. Mimeographed Paper, Table 1.

¹⁶M. Spiegelman, *Introduction to Demography* (Chicago: The Society of Actuaries, 1955), pp. 36-38.

Table III-2

Sex-Age Specific Activity Rates for Rural and Urban Areas 1961

Age group	Rural areas		Urban areas	
	Males	Females	Males	Females
<i>Pakistan</i>				
10—14	45.5	6.0	18.3	1.3
15—19	78.1	9.4	57.5	2.4
20—24	91.1	11.6	81.3	4.0
25—44	94.9	12.8	91.6	5.1
45—54	95.2	13.1	91.2	6.7
55—59	93.8	11.4	81.0	5.4
60+	84.4	8.7	62.3	4.6
All ages	56.2	7.2	51.5	2.7
10 years and over	83.9	10.9	72.2	4.1
<i>Bangladesh</i>				
10—14	60.1	13.4	28.9	4.1
15—19	82.5	17.4	63.5	4.1
20—24	92.4	18.1	84.0	5.9
25—44	96.8	19.6	95.4	9.2
45—54	97.3	20.8	93.5	13.9
55—59	95.3	17.3	85.9	12.2
60+	88.1	13.8	65.8	8.4
All ages	56.1	11.1	57.5	4.8
10 years and over	88.3	17.9	78.2	7.6

Sources: R.A. Karwanski, *Projections of Labour Force for Pakistan and Provinces, 1960—1990*; Appendix II.

It is quite possible that the above set of factors might also apply to age group 15-19 and so their urban male activity rates may be underreported.

There is an anomaly in the comparison of rural-urban differentials in male crude activity rates between the two countries. In Pakistan, the differential is consistent. Stemming from higher age-specific activity rates in rural areas, the rural crude activity rate is also higher. But, in Bangladesh, the urban rate is slightly higher than the rural one. The explanation is two-fold; (i) compared to Pakistan, the urban areas in Bangladesh are more characterized by "temporary migration" (i.e., rural dwellers moving into the cities in pursuit of temporary employment without their families), which, although may not contribute much to the growth of urban

population, does create a favourable age structure,¹⁷ and (ii) as seen above, the age-specific rates in urban areas themselves are quite substantial.

The explanation for female rural-urban differentials, which are more pronounced than those of males, is very different. The influence of social, economic, and cultural factors is quite vivid. The analysis of low female activity in urban areas in the last section of Chapter 2 applies here. It has been hypothesized that women's work participation in urban areas tends to decline in the early stage of industrialization as the urban employers can usually draw upon an almost unlimited supply of male labour, and tends to increase at advanced stages of industrialization.¹⁸

Dependency Load

In our analysis so far, we have been dividing the population into two groups, namely economically active and economically inactive; the latter may be referred to as the dependant population. For a more refined approximation of the dependency load, the persons not engaged in economic activity should again be subdivided according to their functions. To serve this purpose, a functional classification such as in Table III-3 is usually adopted.

The criterion of dependency of not being occupied in current income-generating activities has been subjected to a great deal of controversy. According to one study, the unpaid work done for other than monetary purposes (consisting largely of productive home-making services rendered by housewives), if it could be measured, would be found to have increased the estimated GNP for the U.S. in 1964 by 38 percent.¹⁹ Also a margin of error should be allowed for, as any such functional grouping of the population (including persons not in the labour force) is not entirely mutually exclusive and strictly definable. There may be considerable overlapping of the functions.²⁰ However, despite its limitations, an analysis of the composition of the dependency load is important as a guideline for policies of social welfare and for manpower planning (important for the latter since it provides an estimate of potential or "domestic reserve" workers, which in turn may provide an estimate of the flexibility of the labour force size).

¹⁷Karol J. Krotki, "Temporariness of Urban Migration Estimated from Age Distributions in Large and Small Towns of East and West Pakistan," *Proceedings of the Pakistan Statistical Association*, Lahore, Vol. III, pp. 115-126; K. Haroon and Y.A. Jan, "Main Economic Characteristics of the People of Pakistan: Sixth Release from the 1961 Census," *The Pakistan Development Review*, Vol. IV, No. 2, Summer 1964, p. 328.

This observation does not contradict the above argument about underreporting of young adult males in Pakistan. Here, statistically, with only a small percentage of male population living in urban areas in Bangladesh (5.9 percent as compared to 25.3 percent in Pakistan), a small amount of rural-urban migration will have a comparatively large impact on the age structure of the urban population.

¹⁸Penniment, *op. cit.*, p. 320; J.N. Sinha, "Dynamics of female participation in economic activity in a developing economy," U.N. *World Population Conference*, 1965, Vol. IV, (New York: 1967), pp. 336-337.

¹⁹James N. Morgan, Ismail A. Siragalden and Nancy Baerwaldt, *Productive Americans* (Ann Arbor: University of Michigan Institute for Social Research, 1966), p. 5; also see Ismail A. Siragalden, *Non-Market Components of National Income* (Ann Arbor: University of Michigan, Institute of Social Research, 1969).

²⁰For an interesting discussion of the problems in distributing population by functional groups, see A.J. Jaffe and C.D. Stewart, *Manpower Resources and Utilization Principles of Working Force Analysis* (New York: John Wiley and Sons, 1951), pp. 213-215; Bancroft, *op. cit.*, pp. 21-22.

Table III-3 shows two dependents for every worker in both Pakistan and Bangladesh—quantitatively, a substantial dependency load in terms of *production efforts* versus *demand for consumption*. One-third of this dependency load consists of women occupied with home-making only. Such numerical importance of home-making is due partly to the influence of social, economic, and cultural factors (and reporting bias) discussed in Chapter 2 and partly to the very low age at marriage for girls (around 16 years),²¹ the universality of marriage and the stability of it (former Pakistan's divorce rate of less than one percent is one of the lowest in the world). This dependency component indicates substantial potential additions to labour supply, given that sufficient jobs are generated.

The very low educational investments in Pakistan and Bangladesh have created a serious social and economic problem. The proportion of students to labour force members is 1 to more than 5.5 in both countries. This proportion remains low, even after accounting for the very broad-based population structure. Needless to say, substantial investments in education will be required to expand the potential of high-level manpower, which often proves to be as crucial a bottleneck to development efforts as physical capital.

Table III-3

Functional Distribution of Persons not in Labour Force and Ratio of Persons not in Labour Force Per 100 Labour Force Participants

Functional class	Numbers (thousands)	
	Pakistan	Bangladesh
Total not in labour force	26,679	33,397
Doing household work only	9,339	11,089
Students	2,225	2,988
Other	15,115	19,320
Under 10 years	11,947	17,410
10—60 years	2,346	910
60+	822	1,000
<i>Ratio per 100 labour force participants</i>		
Total not in labour force	209	191
Doing household work only	73	64
Students	18	17
Other	118	111
Under 10 years	94	100
10—60 years	19	5
60+	6	6

Sources: *Population Census of Pakistan, 1961, Census Bulletin No. 5, Table 3; Vol. 1, Table II and Table 22.*

²¹S.I. Alam, "Age at Marriage in Pakistan," *The Pakistan Development Review*, Vol. VIII, No. 3 Autumn 1968, pp. 489-498.

The residual category "other" is by far the largest component of the dependency load.²² Given the high levels of fertility, it is not surprising to see dependents under 10 years of age constituting four-fifths of this category in Pakistan and nine-tenths in Bangladesh. This means large increments to the labour force in the next ten years or so. With a wider (both absolutely and relatively) based population pyramid, the growth of labour force in Bangladesh will be higher than that in Pakistan.²³ Given the limited development funds available, the amount of investment required to create jobs for this extra manpower, plus the fact that about one-fifth of the present labour force in the two countries is unemployed or under-employed, pose a serious challenge to the objectives of full employment and self-sufficiency.

Finally, in Pakistan, the 10-16 years old sub-group in the "other" category is numerically more significant than, for example, "students." When it is considered that more than one-third of this group (numbering 866 thousand) consists of males 10-19 years of age reported as not attending school, nor in the labour force, nor disabled, though some of them are in the armed forces, the social facets of the dependency problem become even more pressing. This problem does not appear to be significant in Bangladesh but, none-the-less, very high activity rates for age group 10-19 are only a poor substitute for educational opportunities from the long run economic development point of view.

The Length of Working Life of Males

Since the men in Pakistan and Bangladesh form the bulk of the breadwinners at all ages, we proposed to concentrate on men alone and to measure the dimensions of labour supply in terms of the years of a man's life cycle. In this connection, several concepts of the length of active life, explained and compared below, are used.

Comparison between the Concepts of Gross Years and Net Years of Active Life

Analogous to the concepts of gross and net reproduction rates frequently used in the study of fertility and population replacement, are the *gross* and *net years* of active life used for measuring the economically active portion of the life cycle. *Gross years of working or active life* refer to the average number of economically active years for males of a generation, assuming no death before the age of retirement, while the *net years* take into account the shortening of working life due to mortality. In other words, the net years will be smaller than the gross years of active life by the extent of the effect of mortality.

Gross Years of Active Life

Given a set of age-specific activity rates, "gross years of active life" are calculated as the summation of age-specific activity rates multiplied by the number of years in the respective age intervals and so represents a convenient summary of the levels of age-specific activity rates. Like the age standardized activity rate, gross active years is independent of the age structure of the population, but it is a better measure since

²²This category includes 136 thousand "disabled persons" in Pakistan and 108 thousand in Bangladesh.

²³R. A. Karwanski, *Projections of Labour Force for Pakistan and Provinces, 1960—1990* (Islamabad: ILO/UNDP Manpower Planning Project, 1969), Tables 38, 39 and 60.

it is free of the inherent bias in the "selection of a standard population" in the former. For calculating the gross active years, the potential economically active age span is taken as 10-69 (both years inclusive).

Given the age-specific activity pattern of 1961 for the two countries the following are the average number of years a male surviving to the upper age limit of different age spans would contribute to economic activity:

	Age groups				
	10—24	25—54	55—69	10—69	15—69
Pakistan	9.9	28.2	12.8	50.9	49.0
Bangladesh	11.5	28.8	13.7	54.1	51.2
Industrialized countries ²⁴	—	—	—	—	48.4
Semi-industrialized countries ²⁴	—	—	—	—	49.6
Agricultural countries ²⁴	—	—	—	—	50.8

The above results conform with our earlier inferences. Gross years of active life in agrarian Bangladesh are appreciably higher than the corresponding ones for semi-industrialized Pakistan in each age span. If death does not occur before age 70 or, for that matter, if the probability of survival is assumed to be the same regardless of the degree of economic achievement, a Bangladesh male will spend more years of his life, on the average, in active status as compared to a man in an industrialized or semi-industrialized economy.

Net Years of Active Life

To estimate the actual number of years that a generation of males is expected to work we have to account for the force of mortality. For this we calculate the "net years of active life" in the context of a life table. This will be, technically speaking, a "labour force" or "working life table" representing the life cycle of a generation of males subject in each age interval of their lifetime to the given rates of mortality and of participation in economic activity.²⁵

The 1961 census reporting of age-specific activity rates for males and the abridged life tables (the prerequisites for the construction of working life tables) generated from the 1962—64 Population Growth Experiment mortality data²⁶ form the basis of the following calculations. The conventional assumptions of stationary

²⁴U.N., *op. cit.*, (1962), Table 4.2.

²⁵Besides their use for quantifying the economic problem of dependency, which is our immediate concern, working life tables are useful in studying the processes of growth and structural change of the labour force, estimating such quantities as lifetime expectations of earnings, evaluating returns from investment in human capital, assessing economic implications of changes in activity rates and age structures of the population, etc.

J.D. Durand and A.R. Miller, *Methods of Analyzing Census Data on Economic Activities of the Population* (New York: U.N., Department of Economic and Social Affairs, 1968), p. 19.

²⁶The age-specific mortality rates calculated by Farhat Yusuf, "Abridged Life Tables for Pakistan and its Provinces, 1962-64," International Union for the Scientific Study of Population, *Sydney Conference, 1967, Contributed Papers* (Sydney, August 1967), pp. 533-541, are used here to calculate intervening life table columns and e^0_x , expectancy of life. (Yusuf's paper gives only mortality rates and e^0_x).

Table III-4—Continued.

Abridged Table of Economically Active Life for Males: Bangladesh 1962/63/64

Age group*	Specific activity		Stationary population			Life expectancy in years			Average remaining years in labour force of an active survivor
	In age group	At beginning age x	Total	In labour force		Total	In labour	Inactive	
	nW_x	W_x	nL_x	nLW_x	nL/W_x	e^o_x	e^ow_x	$e^o_x - e^ow_x$	R_x
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
0	—	—	87,918	—	—	48.4	36.0	12.4	—
1—4	—	—	321,288	—	—	56.6	42.9	13.7	—
5—9	—	—	379,015	—	—	57.5	46.6	10.9	—
10—14	58.14	—	370,645	215,493	358,710	54.4	48.3	6.1	53.0
15—19	81.12	69.63	367,028	297,733	355,210	49.9	45.8	4.1	48.6
20—24	91.55	86.34	362,412	331,788	350,742	45.3	42.2	3.1	44.0
25—29	95.05	93.30	356,745	339,086	345,258	41.0	38.3	2.7	39.7
30—34	96.10	95.58	349,242	335,622	337,996	36.6	34.1	2.5	35.3
35—39	96.47	96.29	339,200	327,226	328,278	32.6	30.1	2.5	31.2
40—44	96.78	96.62	327,305	316,766	316,766	28.5	26.2	2.3	27.1
45—49	96.60	96.69	311,347	300,761	300,761	24.6	22.3	2.3	23.1
50—54	95.95	96.28	289,630	277,900	277,900	21.0	18.7	2.3	19.5
55—59	94.84	95.39	263,235	249,652	249,652	17.6	15.4	2.2	16.1
60—64	92.00	93.42	229,927	211,533	211,533	14.3	12.1	2.2	13.0
65—69	87.00	89.50	187,195	162,860	162,860	11.5	9.3	2.2	10.4
70—74	82.00	84.50	137,452	112,711	112,711	9.0	7.0	2.0	8.3
75—00	74.00	78.00	158,010	116,927	116,927	7.1	5.3	1.8	6.7

*Interval between successive birthdays (x to x+n), when x is exact birthday.

In terms of the fraction of life spent in labour activity, the differences are in line with the general observation of a negative relationship between percent of active man-years in total life span and the degree of industrialization. Comparisons with the average length of working life as a percentage of total expected life in countries classified by degree of industrialization in the 1950's,³² show that Bangladesh with respective figures of 74.4 percent at birth and 91.8 percent at age 15, identifies with the situation in agricultural countries (70.2 and 90.0 percent, respectively). Pakistan, on the other hand, has corresponding figures of 68.7 percent at birth and 85.8 percent at age 15 and is more associated with the semi-industrialized countries (67.4 and 87.1 percent, respectively). These results are consistent with our findings in Sections 1 and 2 of this chapter. It is interesting to note that both countries with quite favourable expectations of life at age 15 (49.9 and 52.8 years, respectively, as compared to 46.1 years for agricultural countries and 49.5 years for semi-industrialized ones) combined with relatively low retirement rates, have the same number if active man-years (45.8 and 45.3) as the average of industrialized countries (45.3).

Net Effect of Mortality on Length of Working Life

The difference between gross active years and net active years of a cohort in a given age span represents the loss in working life due to mortality.

The ${}_nLW_x$ values in Table III-4 which represent active years of life for survivors in age interval x and $x+n$, if summed over the age intervals between 10 and 69 years, show that a single generation of 100,000 male babies during this age span would generate a total labour force equivalent of 3.25 million man-years in Pakistan and 3.126 million man-years in Bangladesh, a life-time average of 41.1 and 43.6 years, respectively for a Pakistani and a Bangladeshi survivor at age 10.³³ This means that the average potential span of 50.9 years in West Pakistan and 54.1 productive years in Bangladesh as calculated above will be shortened as a result of mortality by 9.8 years and 10.5 years, respectively. So, given the constancy of the present activity rates, there is scope for lengthening the average span of active life.

The present trend in the two countries is that of declining mortality. With the emphasis upon health and improvements in mortality, it is probable that the expectation of life will substantially improve in the coming years. This will imply substantial savings in investments which, would otherwise be wasted in the rearing of children who die before reaching the age of participation in economic activity, as well as the assurance of continued contributions to GNP by workers who would not die before retirement age. A planner should weigh the above economic benefits against the increase dependency load which, primarily, is the combined result of a larger number of inactive years and an increase in the proportion of child population (assuming that fertility remains constant).

Unfortunately, planners and sometimes even researchers in the field fail to recognize the impact of curtailed mortality on the health, attitude and psychology of workers and the population. The likely effect is an improvement in the quality of

³²U.N., *op. cit.*, (1962), Table 4.4.

³³This average is calculated as: $69 \text{ years } (\leq ({}_nLW_x)/1_{10})$. $x=10 \text{ years}$

labour force.³⁴ And if proper policies are followed and productivity of labour is increased, the overall effect of the mortality improvement can be a boon to economic growth.

Average Remaining Years of Active Life, R_x

This measure refers to the average future years per economically active person among the survivors of a life table cohort at a given age. In this sense, as said by Wolfbein, it seems to be "most consistent with the life table concept."³⁵

The calculation of R_x is similar to that of e^ow_x for ages above the point at which the specific activity rate is maximal (35 years for Pakistan and 40 for Bangladesh), with the exception that instead of dividing the cumulated active stationary population ${}_nLW_x$ by the number of survivors, l_x , it is divided by the number of economically active survivors, w_x , at each age.³⁶ For ages below the point of maximal activity, a conventional modification is introduced in terms of applying this maximal activity rate to the life table values of ${}_nL_x$ (these new values are referred to as L/W so as to distinguish them from ${}_nL_x$) and l_x .³⁷

Table III-4 shows that economically active male survivors to age 10 will have on the average 53.9 remaining years in the labour force in Pakistan and 53.0 years in Bangladesh.³⁸ It may be noted that like "expectation of inactive life," "average remaining number of inactive years" can be calculated by subtracting R_x from e^ow_x . In general, the age patterns of R_x are similar to those of e^ow_x (with the obvious difference that R_x is greater than e^ow_x at each age, by definition) and the same conclusions hold as above.

Dynamics of Labour Force Growth

Working life tables are increasingly being used to provide gross estimates of entry into and separation or withdrawal from labour activity—dynamic aspects of labour force growth. Separation from work participation is identified as due to death or due to retirement (voluntary or involuntary).

Table III-5 provides the rates of labour force replenishment for males by accession and of depletion by death and retirement, at each age interval.³⁹ Based on the assumptions of working life tables, net accession rates, ${}_nA_x$, are computed from the net increments in the stationary labour force after allowing for the mortality factor among workers. In probability terms, an accession rate gives the number of

³⁴It has been suggested that such positive effects may be important. S. Kuznets, "Statement by the Moderator: Demographic aspects of economic growth," *World Population Conference, 1965*, (New York, 1967), Vol. 1, pp. 305-316.

³⁵Wolfbein, *op. cit.*, p. 293.

³⁶ w_x : the number of survivors in the cohort of 100,000 male babies expected to be economically active at each exact year of age subject to the activity rates w_x given in column 3.

³⁷For an extensive analysis of the assumptions and techniques of calculation of this method, see Durand and Miller, *op. cit.*, pp. 24-27.

³⁸Our results are consistent with the ones obtained by Bean, *op. cit.*, (1967a), Table I and II, with the differences due to different life tables based on 1962/63 data used by Bean.

³⁹For each column, the methodology follows Durand and Miller, *op. cit.*, Chapter 2, Section D and Annex A.

males in a life table cohort at a particular age, not in the labour force, who will engage in labour activity before they are five years older. A practical use of these accession rates is to obtain a gross estimate of the number of men expected to be participating in economic activity in coming years, by applying them to the project populations at corresponding ages.

As expected, the rate of entry into the labour force is at its maximum in the two beginning groups, 5-9 and 10-14 years. By the age 25-29, most of the process of entering into the labour force seems to be completed, with only 3.7 persons per 1,000 population in Pakistan and 10.3 persons in Bangladesh in this age group joining the labour force in the next five years. From 10-14 onward, the rates for Pakistan are higher; this, merely reflects the fact that the rate for 5-9 years is much higher in Bangladesh. In Pakistan, entry is concentrated in a shorter age span, almost completed by age 25-29; there are only a few inactive men in the age group 30-34 years expected to be in the labour force in the subsequent five years. On the other hand, in Bangladesh, there are still a few inactive persons in age group 35-39 who will be in the labour force five years later. The differences are, however, too small to warrant detailed explanations. But this observation of shorter age span of entry into the labour force in Pakistan seems to be consistent with the Egyptian experience. The labour force entry for males was terminated by age 30-40 in 1960, five years earlier than in 1947 and 1937 when Egypt was supposedly more agrarian.⁴⁰

Separation from the labour force can occur at any age. Total separation rates for males shown by ${}_nQ^s_x$, increase gradually from a low of around 10 per 1,000 of the male stationary labour force in age group 10-14 to 300 and more for age 65 and over. Up to the age of maximal activity, separation of males from the labour force is assumed to be due only to mortality and thereafter, due to mortality plus retirement.⁴¹ Retirement rates, ${}_nQ^r_x$, follow the same pattern as the rates of separation due to death, ${}_nQ^d_x$ — rising with age. The retirement rates are much below ${}_nQ^d_x$ for each age in Bangladesh. This signifies that males reported as workers in Bangladesh are more likely to die than to retire at any age. However, given the importance of agriculture, the low retirement rates in old age groups stem from the common belief on the part of the worker that he is still a "tiller of the soil" when in fact he may have only nominal labour force activity.⁴² On the other hand, the retirement rates are consistently higher in Pakistan and are more so for ages 60 and over.

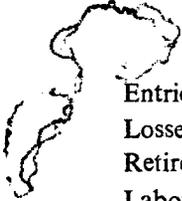
Finally, applying the above age-specific rates of the corresponding 1961 census population and labour force figures for males and dividing the sum of the results for all ages by the total male labour force renders the following crude rates of labour force replenishment by entries and of its depletion by death and retirement:

⁴⁰Nassef, *op. cit.*, Table B.2.

⁴¹As suggested by S. Garfinkle, "The lengthening of working life and its implication," *World Population Conference*, 1965, Vol. IV (New York, 1967), pp. 277-282; these separation rates are important for manpower planning in their use as measures of expected losses from certain occupations due to death and retirement. Applying these rates to the age distribution of workers in these occupations would indicate roughly the number of persons to be trained in each occupation as replacements. Such estimates assume that separation rates for each age group in the labour force apply to the corresponding age groups in each occupation.

However, separation rates, particularly due to retirement, have their limitations as they do not account for possible re-entries into the labour force.

⁴²For further elaboration of this point see, Bean, *op. cit.*, (1967a), p. 254.



Annual crude rate per 1,000 of the male labour force⁴³

	Pakistan	Bangladesh
Entries	41.2	48.9
Losses by death	9.4	11.0
Retirements	4.6	2.7
Labour force replacement rate	27.3	35.3

Defined as the difference between the entry rate and the total separation rate, the *labour force replacement rate* measures labour force growth per 1,000 of the initial labour force size. The above results show that if males in both countries maintain their age-specific activity schedule, population age structure, and mortality rates, then the male labour force in Bangladesh will grow at a rate of 8 points larger than in Pakistan.

Another summary measure is the *labour force replacement ratio*—the number of entries per 100 of withdrawals from the economically active population. This measure may be interpreted “as an index of the pressure of the labour market represented by the demands of entering workers for jobs, in proportion to the number of jobs being vacated by retirement and death.”⁴⁴ This rate is high for males in both countries and especially in Bangladesh, where the ratio of 359.3 requires a greater generation of extra jobs than in Pakistan (259.1). This merits special attention from the planners in Bangladesh as the country already has, as mentioned elsewhere, a significant portion of its labour force underemployed.

Here we are not taking into consideration future developments in female labour supply. In drawing policy conclusions from the above results, an allowance must be made for probable developments. To give an example, during the course of our economic and social development, it is likely that most of the jobs that develop will be in urban areas, leading to a shift in the rural-urban population structure. And considering the substantial rural-urban differentials in activity rates for males, the above summary measure may be overstated; these measures should be taken only as indicators.

⁴³The rates in Table III-5 refer to a 5 year period. For annual rates, the sum totals of entries and separations are divided by 5.

⁴⁴Durand and Miller, *op. cit.*, p. 34.

Chapter 4

INDUSTRIAL AND STATUS STRUCTURE OF LABOUR FORCE

A three-way classification is usually used to identify the structure of labour force; *by industry*—the activity of the establishment or enterprise in which the worker is engaged; *by occupation*—the type of work the worker does irrespective of his industry; and *by status*—the worker's position vis-a-vis other workers (e.g., employer, employee or self-employed). As mentioned in Chapter 1, given some reliable data in these dimensions, production functions which usually assume "homogeneity of labour" can be remodeled to take into account the different types of labour engaged in production by using a vector of labour inputs.

Here an analysis of the structural aspects of manpower is more relevant for its reflection on the organization of the economy and the level of technological development attained. In a developing country, such an analysis, if placed in the context of both regional and temporal variations and if related to such variables as production, earnings, and employment can provide a basis for policy guidelines for improving the quality and productivity of manpower and for restricting unemployment and underemployment. Also, such an analysis is fundamental to the projections of manpower classified into different types of economic activities which is an integral part of the statistical framework of a long-term development plan.

Our study of the structural aspects of manpower is divided into two parts. This chapter deals with the industry and status structures which portray the organization of the economy. In the following chapter we analyze the occupational structure, which, among other aspects, reflects the quality of labour. The interrelations between occupation and industry are also examined in the next chapter.

Census Classification of Industry and Adjustment of the Data

In both the 1951 and the 1961 censuses of former Pakistan, separate questions were asked about the "industry," "occupation" and "status" of the respondent.

The 1961 census industrial classification was based on the Canadian Classification code with only minor adjustments. A three digit decimal code was prepared, providing 9 main groups, 40 sub-groups and 291 minor groups.

The 1951 classification, based on the international standard industrial classification, used a two digit code which provided 9 main groups and 66 sub-groups. However, as admitted,

In the 1951 census, it was felt that the concept of "industry" group was not understood clearly either by the respondents or enumerators. As such, the data on industrial classification in certain detectable cases were found to be inconsistent with the corresponding occupational classification.¹

For such cases entries were edited only for main groups, and it was possible to give information by sub-industrial groups only for Bangladesh. Fortunately, most of the major industrial groups in the 1951 census corresponded with the 1961 ones and, with some adjustments, it is possible to make comparisons.

However, in Pakistan (though not in Bangladesh), a large proportion of the labour force in the 1951 census was reported in the combined category of "unclassified" and "unemployed" (643 thousand or 6.8 percent of the total labour force as compared to only 287 thousand or 1.5 percent in the 1961 census). Without adjustment of this data, analysis of the temporal variations is of limited use. Since most of the persons in the "unclassified" category probably belong to the non-agricultural labour force (assuming all unclassified persons to be in non-agricultural industries, they constituted one-fifth of the total non-agricultural labour force), any prorating scheme of adjustment can be very misleading.

Because of the close relationship between occupation and industry observed in developing economies, the matrix of proportionate share of occupations in the labour force of given industries (or the shares of industries in the labour force of given occupations) can provide a basis for a proper and objective reclassification scheme. From the 1961 census cross tabulation of industry and occupation, we calculated the proportionate shares of industries in the labour force of the main occupations into which the 1951 "unclassified" industry category was distributed (the occupational group of "unskilled labourers" constituted nine-tenths of the total "unclassified"). These shares were found to be very similar for the two countries. (Also the corresponding shares in 1951 for Bangladesh were in line with those of 1961.) Assuming that these shares were also similar in the two in 1951, the proportionate shares of 1951 industries in the labour force of the main occupations containing "unclassified" industry in Pakistan were adjusted primarily in accordance with those of Bangladesh in 1951. As a result we were able to reduce the combined category of "unclassified" and "unemployed" to 307 thousand, a large number of whom probably were in the "unemployed" category. However, the results should be interpreted with caution.

The other major adjustment was for the change in age limit. The 1961 industrial distribution of labour force was adjusted for temporal comparisons by excluding persons of age 10-11 years from all industrial groups. Appendix Table 1 provides the adjusted industrial distribution of labour force, 1951—1961.

The very detailed three digit industrial classification of 1961 permitted reclassification by a slightly modified version of the industrial classification system develop-

¹Office of the Census Commissioner, Ministry of the Interior, *Census of Pakistan, 1951*, Vol. 1 (Karachi: Manager of Publications), p. 7.

ed by the Population Studies Center at the University of Pennsylvania (from here on referred to as PSC). The detailed PSC industrial classification is useful for assessing the quality of the labour force structure by separating traditional sectors of the economy from the relatively modern ones. It also provides a closer approximation to a measure of the disparity of economic opportunity across regions.

The Cottage Industry Enquiry

The cottage industry² enquiry which was undertaken in 1950 and 1960 as part of the Housing Census provides valuable information about manufacturing activity carried on outside the factory system. With meagre capital investment but with, supposedly, higher labour productivity than in agriculture, cottage industry (stepping over the acute bottleneck of capital funds) can be an important source of employment as well as a healthy contributor to industrial production in developing countries. It is claimed that cottage industry, if planned on the right basis, can play an important role in economic development, at least in the transitional stage.³

With the available detailed classification of cottage industries, it is possible to reclassify them into 5 sub-categories; viz., "food and beverages," "textiles," "basic metal industries and products," "machinery" and "all other manufacturing" corresponding to the classification of manufacturing industries used in Table IV-1. This may serve to separate traditional from relatively modern manufacturing industries.

Industrial and Status Composition of the Labour Force, 1961

Industrial Composition

Table IV-1 provides the detailed distribution of the labour force in Pakistan and Bangladesh by PSC industrial groups. The table shows that Pakistan, besides having lower percentage of its labour force in agriculture, has within its agricultural labour force, larger percentages in non-cultivation groups particularly in "livestock keeping" and "other agriculture classes."

Before doing a comparative analysis of the non-agricultural labour force in the two countries, there are two points worth mentioning. First, the percent distributions of total labour force (both sexes) and of male labour force are almost identical because of the great predominance of males in the labour force, and hence, only one of them is sufficient, particularly for the analysis of non-agricultural labour force. Characteristics of the male labour force participants can be used a proxy for those of the total labour force. This, however, does not hold for the agricultural labour force. With 71 percent of the total female labour force in Pakistan and 92

²The following definition was used for "Cottage Industry" in the 1960 Housing Census:

Cottage industry is one which is carried on wholly or mainly with the help of the members of a household working whole or part time on a handicraft or manufacturing articles of utility, decorative or artistic value for sale mainly *outside* the village or mohalla (block) where they are manufactured.

Office of the Census Commissioner, Ministry of Interior, *Population Census of Pakistan, 1961*, Census Bulletin No. 6 Cottage Industry, 1960 (Karachi: Manager of Publications), p. 5.

³K.M. Azam, *Planning and Economic Growth* (Lahore: Maktaba-tul Arafat, 1968), pp. 61-65.

percent in Bangladesh in agriculture, the relative percentages for males and both sexes are not very similar. Secondly, we have included the categories of "activities not adequately described" and "unemployed"⁴ in the non-agricultural labour force, as was done in the census tabulations. The a priori reasoning for so doing is that since agricultural activity is comparatively more simply identified by both respondent and enumerator, there is a strong probability that most of these persons belong to the non-agricultural labour force. Also, only unemployed persons in non-agricultural pursuits were reported in the census as unemployed. In the peasant form of agriculture, under-employment is usually more prevalent than unemployment.

While keeping in mind the difference in the level of non-agricultural activity between Pakistan and Bangladesh, we will try to assess the relative quality of non-agricultural labour force by analyzing its structure in the two countries. Taking the total non-agricultural labour force as 100 percent, we observe that more than four-fifths of it in both countries is concentrated in the three major industrial categories, viz., "manufacturing," "commerce" and "services." In the detailed distributions, however, some differences emerge. Manufacturing absorbs one-third of the total non-agricultural labour force in Pakistan, 3 percentage points more than in Bangladesh. Also the sub-groups of "basic metal industries and products" and "machinery" (particularly the latter), which use the most modern technology are proportionately more substantial in Pakistan.

Table IV-1

Detailed Industry Distribution of the Labour Force by Sex, 1961

Industry	Both Sexes	Males	Females	
		<i>Pakistan</i>		
A	Total labour force ('000)	12,763	11,641	1,122
	Agricultural labour force ('000)	7,644	6,848	796
	Percent of total labour force	59.9	58.8	71.0
A-1	Percent cultivation	56.4	55.2	68.1
A-2	Percent livestock keeping and other agricultural classes	3.3	3.4	2.8
A-3	Percent forestry, fishing and trapping	0.2	0.2	0.0
	Non-agricultural labour force ('000)	5,119	4,793	326
	Percent of total labour force	40.1	41.2	29.0
	Non-agricultural labour force	100.0	100.0	100.0
B	Mining	0.4	0.4	—
C	Manufacturing	33.4	32.8	42.2
C-1	Food and beverages	2.2	2.1	3.6
C-2	Textiles	12.6	11.4	29.2
C-3	Basic metal industries and products	2.5	2.6	0.2
C-4	Machinery	2.2	2.3	0.1
C-5	All other manufacturing	13.9	14.3	9.0

⁴The unemployment figures reported in the census (Table IV-1) are considered to be too low, especially for males.

Table IV-1—Continued

Industry		Both Sexes	Males	Females
<i>Pakistan</i>				
D	Construction	5.1	5.4	1.3
E	Electricity, gas, water and sanitary services	0.5	0.5	—
F	Commerce	17.5	18.4	3.6
F-1	Trade	17.1	18.1	3.5
F-11	Wholesale	1.8	1.9	0.1
F-12	Retail	15.3	16.1	3.4
F-2	Finance, insurance and real estate	0.4	0.4	0.1
G	Transportation, storage and communication	7.1	7.5	0.7
G-1	Transportation	6.5	6.9	0.5
G-2	Storage and communication	0.6	0.6	0.2
H	Services	30.4	29.6	42.4
H-1	Government services	6.6	6.9	2.1
H-2	Community services	4.5	4.1	10.6
H-21	Education	2.1	1.8	6.3
H-22	Medical and other health services	1.1	0.9	3.8
H-23	Religion, welfare and other community services	1.2	1.3	0.5
H-3	Business services	1.7	1.8	0.3
H-4	Recreation services	0.7	0.7	0.4
H-5	Personal services	17.0	16.2	29.0
H-51	Domestic services	3.2	2.5	14.0
H-52	Restaurant, cafe and taverns	1.3	1.4	0.1
H-53	All other personal services	12.5	12.3	15.0
X	Activities not adequately described	1.9	1.4	8.1
Y	Unemployed	3.7	3.9	1.7
<i>Bangladesh</i>				
	Total labour force ('000)	17,443	14,802	2,640
A	Agricultural labour force ('000)	15,001	12,578	2,423
	Percent of total labour force	86.0	85.0	91.8
A-1	Percent cultivation	83.7	82.8	89.1
A-2	Percent livestock keeping and other agricultural classes	1.2	1.0	2.4
A-3	Percent forestry, fishing and trapping	1.1	1.3	0.2
	Non-agricultural labour force ('000)	2,442	2,225	217
	Percent of total labour force	14.0	15.0	8.0

—Continued

Table IV-1—Continued

Industry		Both Sexes	Males	Females
<i>Bangladesh</i>				
	Non-agricultural labour force	100.0	100.0	100.0
B	Mining	0.1	0.1	0.1
C	Manufacturing	30.5	28.1	55.8
C-1	Food and beverages	2.3	1.9	6.6
C-2	Textiles	13.9	12.1	31.7
C-3	Basic metal industries and products	1.4	1.5	0.1
C-4	Machinery	1.0	1.1	—
C-5	All other manufacturing	12.0	11.5	17.3
D	Construction	3.5	3.8	0.1
E	Electricity, gas, water and sanitary services	0.4	0.5	—
F	Commerce	23.7	25.2	8.7
F-1	Trade	23.3	24.8	8.7
F-11	Wholesale	2.6	2.8	0.2
F-12	Retail	20.7	21.9	8.5
F-2	Finance, insurance and real estate	0.4	0.4	0.1
G	Transportation, storage and communication	8.3	9.1	0.4
G-1	Transportation	7.4	8.1	0.3
G-2	Storage and communication	0.9	1.0	0.1
H	Services	28.6	28.1	33.4
H-1	Government services	6.1	6.6	1.2
H-2	Community services	7.6	7.9	4.0
H-21	Education	4.4	4.6	1.8
H-22	Medical and other health services	1.8	1.8	2.0
H-23	Religion, welfare and other community services	1.4	1.5	0.2
H-3	Business services	0.8	0.9	—
H-4	Recreation services	0.4	0.4	0.3
H-5	Personal services	13.7	12.3	27.8
H-51	Domestic services	4.9	3.3	22.2
H-52	Restaurant, cafe and taverns	1.2	1.4	—
H-53	All other personal services	7.5	7.7	5.6
X	Activities not adequately described	2.4	2.6	1.1
Y	Unemployed	2.5	2.7	0.4

Sources: *Population Census of Pakistan, 1961, Vol. 4, Table 8; Vol. 3, Table 50 and Vol. 2, Table 50.*

The manufacturing figures here include cottage industries. The following are the numbers of workers engaged in manufacturing according to the census (in Table IV-1) and the numbers in cottage industries reported by the cottage industry enquiry:

Pakistan

	Manufacturing		Cottage industry	
	Male	Female	Male	Female
Food and Beverages	100,432	11,827	1,523	227
Textiles	548,500	95,191	79,635	27,970
Basic metal industries and production	126,827	813	4,834	186
Machinery	111,080	229	—	—
All other manufacturing	684,341	29,327	21,483	15,095
Total	571,180	137,387	107,475	43,478

Bangladesh

Food and Beverages	42,050	14,329	2,025	374
Textiles	270,193	68,988	208,682	144,022
Basic metal industries and production	32,864	211	7,694	422
Machinery	23,501	32	—	—
All other manufacturing	255,752	37,699	66,282	51,515
Total	624,360	121,259	284,683	196,333

As particularly apparent from the figures for females in Bangladesh, the population census and the cottage industry enquiry enumerations are not consistent with each other. Large number of persons reported in cottage industries by the cottage industry enquiry would have been classified as in agriculture by the population census if cottage industry were their second and subsidiary source of livelihood. This is possible as the cottage industry was largely concentrated in the rural areas. To avoid such problems, the population census itself should ask a separate question about cottage industry and/or a question should be included in the cottage industry enquiry as to whether cottage industry is the primary or secondary source of livelihood.

Even after accounting for data limitations, manufacturing activity in Bangladesh, particularly among females, seems to be prominently concentrated in cottage industries.

Manufacturing in Pakistan and services in Bangladesh are the leading sources of employment for the male non-agricultural labour force. Compared with Pakistan, Bangladesh has a comparable percentage in "government services" and a higher one in "community services"—the more important sub-categories of the service industry. With community services, sub-groups of "education services" and "medical and other health services" are more likely to grow in the early stages of economic development than, for example, "business services" and "recreation

services,"⁵ where the percentages for Pakistan were comparatively higher. Also, even though Bangladesh has a lower percentage in "personal services," it has a larger one in the sub-group "domestic services," which usually has an inverse relationship with economic development.

Commerce involves a substantial percentage of the non-agricultural labour force in both countries. In Bangladesh, it is a means of livelihood for almost one quarter of the non-agricultural workers, seven percentage points higher than in Pakistan. The bulk of commerce in both provinces is "retail trade". One distinct feature of developing economies is that retail trade is a significant source of livelihood for workers not in agriculture. The importance of retail trade within commerce varies inversely with the level of economic development. It is also said that "a family type of organization tends to persist in retail trade in the course of economic development beyond the point where it disappears in most other non-agricultural activities."⁶ In fact, retail trade and domestic services, if not substitutes for inadequate opportunities on the farm, may represent a lower quality of labour engagement than other non-agricultural activities. Hence Bangladesh, with more than one quarter of its total non-agricultural labour force classified in these two groups, is even more backward in real terms than is implied by the percentage of labour force in non-agricultural activity.

Important sex differentials are observed in Table IV-1. In both countries the proportion of total female workers enumerated in non-agricultural pursuits is significantly lower than that for males. This is in line with our arguments in Section 4 of Chapter 2.

Within the non-agricultural labour force, the degree of industrial concentration of females is more pronounced than that of males. Manufacturing and services together account for 84.6 percent and 89.1 percent of the total female non-agricultural labour force in Pakistan and Bangladesh, respectively. Also, within these two industries women are mainly concentrated in textiles and domestic services. Industrial categories like basic metal industries; machinery; construction; electricity, gas, water and sanitary services; and transportation, storage and communication seem to be almost closed to female employment.

Status Composition

The United Nations Statistical Commission recommends the following six categories for the classification of the labour force by status:⁷

- A. *Employer*: A person who operates his (or her) own economic enterprise or engages independently in a profession or trade, and hires one or more employees.
- B. *Own-account worker*: A person who operates his (or her) own economic enterprise or engages independently in a profession or trade, and hires no employees.

⁵This is the basis in PSC classification for distinguishing these sub-categories within services. Population Studies Center, *Description of Industry Groups used in Comparative International Labour Force Study* (Philadelphia: University of Pennsylvania, 1969), mimeographed, p.3.

⁶*Ibid.*, p. 2.

⁷U.N., Statistical Office, *Principles and Recommendations for National Population Censuses* (New York, 1958), para. 417.

- C. *Employee*: A person who works for a public or private employer and receives remuneration in wages, salary, commission, tips, piece rates or pay in kind.
- D. *Family Worker*: A person who does a specified minimum (at least one-third of normal working hours) amount of work with or without pay in an economic enterprise operated by another member of his (or her) household. (Equivalent of this category in the Pakistani census is "unpaid family help" without reference to minimum amount of work. We will refer to this category as "unpaid family workers.")
- E. *Members of producers' co-operatives*: A person who is an active member of a producers' co-operative, whether in industry or in agriculture.
- F. *Persons not classified by status*: Experienced workers with status unknown or inadequately described, and unemployed persons not previously employed.

The above classification with the exclusion of the category "members of producer's co-operatives" is applied in the census of former Pakistan for the non-agricultural labour force as shown in Table IV-3.

Status Composition of the Agricultural Labour Force

Given the special characteristics and operational framework of agricultural activity in developing countries, the status distribution of the agricultural labour force should not be interpreted in the same way as the status distribution of the non-agricultural labour force. For example, the group of "landless agricultural labourers" is more or less equivalent to the "employee" category in the non-agricultural sector. Usually the proportion of employees in non-agricultural activity (particularly that related to physical-goods-producing industries and commerce) is used as an indicator of the importance of the modern sector as characterized by capital intensive enterprises employing modern technology and engaging in mass contractual employment. But, in countries like Pakistan or Bangladesh the proportion of landless agricultural labour may reflect the incidence of under-employment.

In a peasant type of agricultural organization, it is desirable to use in conjunction with the above classification, a land tenure classification to separate cultivators into owners, renting cultivators, etc., as in Table IV-2. It may be noted that the census did not strictly follow U.N. Classification in reporting the status composition of the agricultural labour force.

Our discussion here refers only to cultivators.⁸ For non-cultivator agricultural workers it may be relevant to use the U.N. status classification as in Table IV-3.

⁸"Cultivator" is defined in the census as a person who himself works on the land or who employs others to do so under his direct personal supervision. He is classified as owner, tenant or landless agricultural labourer, depending on his land-tenure status. He can have more than one status, e.g., he may be renting land as well as working for hire. This problem of multiple status is found among non-agricultural workers also. It is very likely that a large number of persons are working part-time as employees and part-time as own-account workers. This seems particularly characteristic of Pakistan, where there is a substantial non-agricultural sector, but still largely composed of small sized family-owned and family-operated establishments.

Unfortunately, no tabulation of non-cultivators by status was prepared in the 1961 census. Cultivators, however, form the bulk of the agricultural labour force (94 percent in Pakistan and 97 percent in Bangladesh).

A great difference in the status composition of cultivators between the countries can be observed in Table IV-2. Owner-cultivators, with 35.3 percent of the total number, form the largest status class in Bangladesh. On the other hand, in Pakistan the combined group of cultivators "renting all land," or tenants, and "owning part and renting part," or owner-tenants, has a similar percentage (36.1 percent). The explanation is simple. In the area which is now Pakistan, large land settlements were made with the introduction of massive canal irrigation systems during the early middle part of the present century. Farms of large size were frequently distributed among the faithful and dependable British subjects. Land reforms during the late 1950's were not completely successful in transforming the prevailing tenant system into an owner-cultivator one. Holdings of a size large enough to allow profitable renting of lands to others for cultivation were still left.⁹

Table IV-2
Percent Distribution of Cultivators by Status and Sex, 1961

Status	Both Sexes	Males	Females
	<i>Pakistan</i>		
All cultivators	100.0	100.0	100.0
Owning all land tilled	25.6	27.7	9.6
Renting all land tilled	27.3	29.7	5.9
Owning part and renting part	8.8	9.7	1.2
Owning part, renting part and also working for hire	0.6	0.7	0.3
Renting land tilled and also working for hire	1.0	1.1	0.4
Landless agricultural labourers	8.1	8.6	3.6
Unpaid family workers	28.6	22.6	78.9
	<i>Bangladesh</i>		
All cultivators	100.0	100.0	100.0
Owning all land tilled	35.3	39.9	11.8
Renting all land tilled	4.3	4.8	1.6
Owning part and renting part	2.9	3.2	1.0
Owning part, renting part and also working for hire	6.5	7.6	0.6
Renting land tilled and also working for hire	0.5	0.6	0.3
Landless agricultural labourers	17.4	19.6	6.2
Unpaid family workers	33.0	24.3	78.5

Sources: *Population Census of Pakistan, 1961, Vol. 2, Table 50 and Vol. 3, Table 50.*

⁹The land reforms allowed upto 500 acres of irrigated or 1,000 acres of unirrigated land for individual ownership as compared to the ceiling of 375 bighas (approximately, one bigha is equal to one-third of an acre) in Bangladesh, and the right of an owner to transfer a substantial area from a holding to any or all of his heirs.

Such is not the case in Bangladesh. With continuous fragmentation of farms, usually among a large number of heirs, and a very small total cultivable area (in 1961 only 1.54 acres per cultivator as compared to 5.87 acres in Pakistan), not much land is free for rent.

Data on the distribution of farms by size and on land utilization provided by the Agricultural Census of 1960 can be used to assess the relative economic positions of the owner, owner-tenant and tenant groups. The extra burden on land in Bangladesh is shown by the fact that 78 percent of its farms are below 5 acres in size.¹⁰ The tenant group has least land: 89 percent of tenant farms are below 5 acres and only 0.6 percent are 12.5 acres and over, as compared to the corresponding figures of 82 and 3.5 percent for owner farms and 72 and 3.6 percent for owner-tenant farms. Conversely, in Pakistan, the owner class has the least land holdings with 60 percent of its farms below 5 acres and 18 percent of 12.5 acres and more, as compared to the corresponding percentages of 46 and 24 for tenant and 33 and 32 for owner-tenant farms. In terms of land utilization (area sown and area cropped), a more important measure of the economic situation than farm size, the three groups in Bangladesh maintain their relative position. In Pakistan the tenant-operated farms seem to be performing better than the other two groups with more net area sown and area cropped than their share of total cultivable area, and with higher values for indices of land utilization, viz., intensity of land use and intensity of cropping. Owner-tenant farms maintain second position.

As a summary, on the average, a tenant farm in Pakistan (the most prevalent type of farm) has three acres more of cropped area than an owner farm and only two acres less than an owner-tenant farm (compared to the absolute difference of 3.7 acres in total area). In Bangladesh, the average cropped area of a tenant farm is two and a quarter times larger than the average size of an owner farm (the type most prevalent).

Table IV-2 provides evidence of an extra degree of pressure on agriculture as a source of livelihood in Bangladesh. Almost one-fourth (as compared to only 9.7 percent in Pakistan) of the cultivators are reported as "landless agricultural labourers," "owning part, renting part and working for hire," and "renting and also working for hire"—these groups, particularly the former, are known to experience the most frequent underemployment. Underemployment in the agricultural sector seems to be still more disproportionate when we also include the large incidence of underemployment among the cultivator groups.¹¹

Women workers in agriculture in both countries, as expected, seem to work primarily in the capacity of unpaid family workers.

¹⁰Comparing the average sizes of farms in Pakistan and Bangladesh one should account for not only the fertility of the soil but also the type of crops cultivated in the two provinces. For example, wheat (mainly grown in Pakistan) requires larger acreage per unit of labour input than do rice and jute (the main crops of Bangladesh).

¹¹In a recent article, Robinson estimated that, in addition to whatever surplus labour force existed in 1951, there was a surplus of workers amounting to as much as 20 percent of the 1961 labour force. This was "hidden" by a rearrangement of hours worked in agriculture that provided an opportunity for each member of the work force to produce at least enough for this subsistence. W.C. Robinson, "Disguised Unemployment once again: East Pakistan, 1951—1961," *American Journal of Agricultural Economics*, Vol. 51, No. 3, 1969, p. 602.

Status Composition of the Non-agricultural Labour Force

It is a common finding that, *ceteris paribus*, the more modern is the non-agricultural sector of the economy, the larger will be the proportion of employees (and the smaller the proportion of employers and own-account workers). This comes from the dominance of the wage institution which results from the need of industrial operations on a large scale. But a high proportion of employees is not a sufficient condition for modernization. For example, in a socialist country, not necessarily developed, all the workers are state employees. In a non-socialist developing country with a consciously planned economy, the relative roles of the private and public sectors will, among other factors, significantly influence the status composition of non-agricultural workers. In the Initial stages of development of such a country, when private initiative and investment funding for most of the industrial sectors are largely absent, the public sector is primarily responsible for the initial push. At that stage, with very limited non-agricultural activity, the proportion of employees may be quite large.

This argument seems to be particularly true in the case of Bangladesh. Table IV-3 shows that, with a small non-agricultural sector, Bangladesh has 7.3 percentage points more employees among males than has semi-industrialized Pakistan. This

Table IV-3

Distribution of the Non-agricultural Labour Force by Status and Sex, 1961

Status	Males		Females	
	Number (thousand)	Percent	Number (thousand)	Percent
<i>Pakistan</i>				
Total	4,793.4	100.0	325.8	100.0
Employers	46.1	1.0	0.4	0.1
Employees	1,780.3	37.1	90.9	27.9
Own-account workers	2,551.6	53.2	166.9	51.2
Unpaid family workers	259.7	5.4	63.0	19.3
Not stated	155.8	3.2	4.5	1.4
<i>Bangladesh</i>				
Total	2,224.9	100.0	217.5	100.0
Employers	35.6	1.6	0.3	0.1
Employees	987.1	44.4	65.0	29.9
Own-account workers	1,044.0	46.9	98.2	45.2
Unpaid family workers	101.7	4.6	53.2	24.5
Not stated	56.6	2.5	0.8	0.4

Sources: *Population Census of Pakistan, 1961, Vol. 4, Table 3.*

difference also reflects the transitional stage of development through which the Pakistani economy is going; while the private sector is comparatively substantial, a sizeable portion of the private initiative still rests with small-scale enterprises, mostly family-owned and family-operated. We project that in coming decades with accelerated growth of large-scale modern enterprises.¹² employees in Pakistan will increasingly replace the other status groups, particularly own-account workers. Unless the private sector is completely dominated by large-scale enterprises, it is likely that the proportion of own-account workers may increase in Bangladesh when the private sector takes over the initiative in non-agricultural activity.¹³

With regard to the sex differentials in status distribution, we find that in line with previous discussions, seven-tenths of the female workers are either own-account or unpaid family workers. They have less scope for being reported and/or for working in the capacity of employee.

Status Composition of Selected Industrial Groups

Some further inferences about the structure and types of organization of the labour force and the economy can be obtained by analyzing the status composition of selected industrial groups, as reported in Table IV-4.¹⁴

The status composition of manufacturing in both countries indicates a relative absence of the large-scale modern manufacturing enterprises which contribute to the very large proportion of employees in this industry in more developed countries. The sub-group of machinery which requires more modern capital-intensive techniques seems to be the only possible exception. Machinery manufacturing in Pakistan not only engages a relatively higher proportion of workers than in Bangladesh, as observed before, but also has a higher ratio of employees to employers (84 compared to 43 in Bangladesh), indicating its more modern economic organization there.

Mining and "finance, insurance and real estate" have very large proportions of employees in both countries.¹⁵ Construction and, to some extent, transportation resemble manufacturing in their economic organization. On the other hand, retail

¹²For example, in terms of output, large-scale manufacturing in Pakistan increased its output in constant prices from Rs. 342 million in 1950-51 to Rs. 1,394 million in 1960-61 and to Rs. 2,956 million 1966-67. (The corresponding figures for small scale manufacturing are Rs. 700, 882, and 1,030 million.)

¹³Largely stagnant until 1960, the gross domestic product (GDP) of Bangladesh grew, in real terms, at an annual average compounded rate of 4.4 percent during the Second Five Year Plan, 1960-65. The share of agriculture in GDP declined from about 62.4 percent in 1959-60 to 57.1 percent in 1964-65, while the share of manufacturing increased from 6 percent to 8 percent. The year 1967-68 saw a remarkable growth rate of 8.6 percent. However, private investments were markedly below public ones and were able to meet only small percent of the target increase under the Third Five Year Plan. See Government of East Pakistan, *Economic Survey of East Pakistan, 1967-68* (Dacca: Government Press, 1968), Chapter 1.

¹⁴The "services" sector is excluded from Table IV-4 since there is, a priori, a clear cut notion about its structure. By definition, this sector is dominated by employees (except for the third-level groups of "restaurant, cafe and taverns" and "other personal services" in the sub-group of "personal services" where own-account workers may be significant in proportion due to the dominance of family-operated establishments rendering personal services). Excluding personal services, employees constituted 81 and 80 percent of the services in Pakistan and Bangladesh, respectively.

¹⁵In this context, electricity, etc., which is also a modern industry, is a good example of the effect of government control in an industry sector—almost all the workers are employees.

Table IV-4
*Status Composition of Selected Industrial Groups of the Non-agricultural
 Labour Force by Sex, 1961*
 (percent distribution)

Industry		Pakistan				
		Total	Empl- yers	Empl- yees	Own- account workers	Unpaid family workers
		<i>Males</i>				
B	Mining	100.0	0.3	80.1	18.8	0.8
C	Manufacturing	100.0	0.9	33.4	58.9	6.8
C-1	Food and beverages	100.0	2.5	38.5	52.1	6.9
C-2	Textiles	100.0	0.8	38.5	55.5	5.2
C-3	Basic metal industries and products	100.0	0.9	35.4	55.7	8.0
C-4	Machinery	100.0	0.9	74.9	22.2	2.1
C-5	All other manufacturing	100.0	0.8	23.4	67.5	8.4
D	Construction	100.0	1.0	33.1	62.9	2.9
E	Electricity, gas, water, etc.	100.0	0.1	98.4	1.3	0.2
F	Commerce	100.0	2.1	11.2	80.6	6.1
F-11	Wholesale trade	100.0	6.4	16.9	72.2	4.4
F-12	Retail trade	100.0	1.6	8.6	83.3	6.5
F-2	Finance, insurance and real estate	100.0	0.5	94.1	5.3	0.1
G	Transportation, storage and communication	100.0	0.5	52.4	43.7	3.4
G-1	Transportation	100.0	0.5	48.6	47.2	3.7
G-2	Storage and communication	100.0	0.1	95.9	3.7	0.2
		<i>Females</i>				
C	Manufacturing	100.0	0.1	5.8	71.0	23.1
C-1	Food and beverages	100.0	0.1	5.3	76.5	18.1
C-2	Textiles	100.0	0.1	5.2	73.9	20.8
C-3	Basic metal industries and products	100.0	0.6	17.5	36.7	45.2
C-5	All other manufacturing	100.0	0.2	7.2	60.8	31.8
D	Construction	100.0	0.1	16.7	65.3	17.9
F	Commerce	100.0	0.7	6.2	77.1	16.1
F-11	Wholesale trade	100.0	4.4	16.9	67.7	11.0
F-12	Retail trade	100.0	0.6	4.1	78.7	16.6
F-2	Finance, insurance and real estate	100.0	0.5	92.8	6.7	—
G	Transportation, storage and communication	100.0	0.9	57.8	26.6	14.7
G-1	Transportation	100.0	1.2	46.8	32.7	19.3
G-2	Storage and communication	100.0	—	91.4	8.0	0.6

—Continued

Table IV-4—continued

Industry	Bangladesh				
	Total	Emplo- yers	Emplo- yees	Own- account workers	Unpaid family workers
<i>Males</i>					
B Mining	100.0	2.1	71.2	23.0	3.7
C Manufacturing	100.0	1.6	42.1	47.9	8.5
C-1 Food and beverages	100.0	3.5	55.5	35.6	5.4
C-2 Textiles	100.0	1.4	45.5	42.2	11.0
C-3 Basic metal industries and products	100.0	2.3	34.9	54.8	8.0
C-4 Machinery	100.0	1.5	65.9	29.9	2.6
C-5 All other manufacturing	100.0	1.4	35.3	56.4	6.9
D Construction	100.0	0.8	31.8	65.5	1.8
E Electricity, gas, water, etc.	100.0	0.3	93.2	6.2	0.2
F Commerce	100.0	3.3	21.8	68.8	6.1
F-11 Wholesale trade	100.0	5.5	66.7	23.9	1.9
F-12 Retail trade	100.0	3.0	14.7	75.6	6.7
F-2 Finance, insurance and real estate	100.0	0.8	91.0	7.8	0.4
G Transportation, storage and communication	100.0	0.5	61.2	36.9	1.5
G-1 Transportation	100.0	0.5	57.8	40.1	1.6
G-2 Storage and communication	100.0	0.1	88.5	10.9	0.4
<i>Females*</i>					
C Manufacturing	100.0	0.1	6.1	54.5	39.3
C-1 Food and beverages	100.0	0.1	14.5	69.5	15.8
C-2 Textiles	100.0	0.1	5.7	48.0	46.2
C-3 Basic metal industries and products	100.0	3.1	12.6	64.2	20.1
C-5 All other manufacturing	100.0	0.1	3.5	60.8	35.6
D Construction	100.0	—	21.4	60.4	18.2
F Commerce	100.0	0.5	3.6	81.4	14.5
F-11 Wholesale trade	100.0	4.9	65.7	25.8	3.6
F-12 Retail trade	100.0	0.4	2.0	82.7	14.9
G Transportation, storage and communication	100.0	2.1	63.6	23.0	11.2
G-1 Transportation	100.0	2.9	73.2	21.7	2.2
G-2 Storage and communication	100.0	0.4	40.7	26.2	32.7

Sources: *Population Census of Pakistan, 1961*, Vol. 4, Table 9.

*Industries containing less than 150 female workers are excluded.

trade seems to be by far the most traditional with a great majority of its workers reported as "own-account" workers. This seems to strengthen our argument that retail trade may be the non-agricultural equivalent of agricultural sector.

There is a contrasting status composition of "wholesale trade" in the two countries. While this industry is dominated by own-account workers in Pakistan (72.2 percent), in Bangladesh, employees form the most important group (67 percent). This is an example of how a lucrative industry (jute) attracts large-scale and presumably capital-intensive investment within a traditional economy. (The employee-to-employer ratio is 12 in Bangladesh as compared to about 3 in Pakistan.) Also the presence of government enterprises (which are not so large in Pakistan), mainly in the rice and jute wholesale produce markets is partly responsible for the large percentage of employees. It is not surprising that only 3 out of the 17 districts in Bangladesh account for 58 percent of the total employment and 69 percent of the employees in wholesale trade. These districts are Khulna and Chittagong which contain the two commercial ports of the country, and Dacca, which includes Dacca City, the national capital and a big commercial and industrial centre. On the other hand, wholesale trade in Pakistan seems to be more widespread. With large distances and a comparatively low density of population, small scale, localized wholesale trade activity is encouraged. Also through 1960 exports from Pakistan were less substantial and more diversified than those from Bangladesh.

This is a good example of the lack of simplicity in the relationship between status composition and the level of development. One would have expected a high proportion of employees in wholesale trade in Pakistan, if not a higher one than in Bangladesh.

Some Economic Implications of the 1961 Age-Sex Structure of Industries

Important inferences about the trends and dynamic factors involved in the structure of economic activity can be drawn from the patterns of age concentration of workers in different industries. Analysis of such patterns may also be useful for assessing the labour requirements of a particular industry or of multiple industries in the perspective of the total labour supply available in different age spans. Knowledge of the impact of economic changes on the age structure of different industries is important in planning for an adequate supply of workers in appropriate age groups for different sectors. However, due to the problem of age misreporting mentioned before, the conclusions of the following analysis must be interpreted with caution.

We will first briefly discuss the mechanism and the influence of different factors on the age composition of different industries. Jaffe correctly says that "the process whereby the age composition of an industry is formed appears to be largely a function of past rates of growth in employment." He further contends that "faster growing industries tend to have younger labour forces than do slower growing or declining industries."¹⁶ Jaffe's observation may be explained to some

¹⁶A.J. Jaffe, "From New Entries to Retirement: The Changing Age Composition of the U.S. Male Labour Force by Industry," *Demography*, Vol. 4, No. 1, 1967, pp. 273-282. Quotations are from pages 273 and 274, respectively.

extend by cohort effects on the age composition of industries. If successive cohorts of persons entering the labour force remained in their original industry, it would be possible to trace (from period data) the time trend in industry distributions by comparing successive age groups (particularly from the age profiles of industries as shown in Figure IV-1).

The interaction between the rates of growth of the various industries over time and the aging of successive cohorts of labour force entrants is not the only factor influencing the age structure of workers in various industries. Additional factors may be (1) the shifting of workers between industries: such life cycle shifting may be independent of the growth of industries, and (2) differences in the age of entry and retirement between industries. It is not necessary that all the growing sectors show a younger labour force. Some of the goods-producing industries which require relatively more physical exertion by their workers may engage younger persons. Conversely, some of the service-producing industries (especially those involving high-level occupational skills) may be biased toward higher educational qualifications and experience and hence engage persons in the more mature ages. Also these industries may retain more persons of an advanced age than do the former.¹⁷

In a developing economy undergoing structural changes, the relatively more modern industries will expand, and, according to Jaffe, one would expect these sectors to show younger age structures. But, in light of the above discussion this hypothesis may be modified. The hypothesis to be tested here, is that the more modern is an industry or sector, the larger is the proportion of its workers around the median age.

Table IV-5 provides percentage distributions of industries and measures of the first quartile (Q_1), median (Q_2) and third quartile (Q_3). Very distinct features emerge from comparing the industries in their respective distributions of male workers in three broad age groups—under 20 years, prime adult age of 20-44 and age 55 and over. The traditional sectors seem to be composed predominately of the first and third age groups and the modern sectors, of the middle one. In both countries, agriculture and personal services, two of the traditional sectors, have more than one-fifth of their workers below 20 years of age, as compared to only one-tenth for the industries such as electricity, gas, *etc.*, finance, *etc.*, and transportation, *etc.* Persons of prime adult age, 20-44, make up only half of the workers in agriculture and personal services as compared to between three-fifths and seven-tenths in manufacturing (and a larger percentage in the more modern sub-category of machinery manufacturing), construction, transportation, *etc.*, and three-fourths in electricity, *etc.*, and finance, *etc.* These observations imply that some workers in the age span 20-44 (particularly 20-34) shift from the more traditional sectors to the more modern ones. The quartile values support these patterns.

As expected, older ages have a larger share in agriculture (third quartile values of 48.1 and 45.3 years for Pakistan and Bangladesh, respectively). This reflects the

¹⁷Even if physical-goods-producing industries retain their workers in older ages because of their greater skills and experience, their labour force would remain young as they tend to absorb in increasing number new young entrants into the labour force and/or out-mobile young workers from other industries. On the other hand, most of these young workers may not qualify for entry into the service industries mentioned above.

Table IV-5
Age Distribution of Labour Force in Selected Industries by Sex, 1961

Pakistan
(percent distribution)

Industry	All ages	10-14	15-19	20-24	25-34	35-44	45-54	55-59	60+	Quartiles			
										Q ₁	Q ₂	Q ₃	
<i>Males 10 years and over</i>													
	Total labour force	100.0	6.9	11.9	12.4	23.5	17.6	13.5	3.5	10.8	22.0	32.5	46.5
A	Agricultural labour force	100.0	8.5	12.1	10.9	21.7	16.8	13.6	3.8	12.5	21.5	33.0	48.1
	Non-agricultural labour force	100.0	4.6	11.6	14.4	26.0	18.7	13.4	3.2	8.2	22.5	32.0	44.3
B	Mining	100.0	1.8	6.9	15.5	40.9	19.3	10.2	2.4	3.1	24.7	30.8	39.6
C	Manufacturing	100.0	4.8	13.1	15.0	25.6	17.5	12.5	3.0	8.7	21.9	31.2	44.2
C-4	Machinery	100.0	4.0	13.9	18.6	26.6	20.4	11.7	2.1	2.7	21.4	29.6	40.3
D	Construction	100.0	3.6	11.2	13.4	26.7	19.6	14.7	3.2	7.7	23.3	32.7	44.9
E	Electricity, gas, water, etc.	100.0	1.0	10.7	21.2	32.0	18.8	11.1	2.2	3.2	22.6	29.9	39.9
F	Commerce	100.0	3.2	9.6	12.7	26.1	20.6	15.0	3.7	9.0	24.3	34.0	46.4
F-11	Wholesale trade	100.0	1.7	6.8	11.2	26.6	23.2	17.2	4.0	9.5	26.5	36.1	47.7
F-12	Retail trade	100.0	3.5	10.1	12.8	25.3	20.3	14.8	3.8	9.2	24.0	33.8	46.5
F-2	Finance, insurance and real estate	100.0	0.2	5.2	20.0	39.0	20.5	10.2	2.0	2.8	24.4	30.8	39.7
G	Transportation, storage and communication	100.0	2.6	8.8	14.2	29.1	22.2	14.5	2.8	5.8	24.2	32.9	43.6
G-1	Transportation	100.0	2.6	8.8	14.1	29.1	22.2	14.5	2.8	5.8	24.3	32.9	43.7
G-2	Storage and communication	100.0	0.9	8.5	19.4	30.0	21.1	12.5	3.4	4.3	23.5	31.6	42.2
H	Services	100.0	5.0	10.2	14.2	26.5	19.1	13.8	3.2	8.0	23.0	32.2	44.6
H-5	Personal services	100.0	7.8	13.2	12.7	23.2	17.3	13.2	3.2	9.4	21.1	31.5	45.1
Y	Unemployed	100.0	13.5	26.0	20.3	17.5	9.7	6.7	1.7	4.6	16.7	22.1	33.2

—Continued

Table IV-5—Continued.

Industry	All ages	10-14	15-19	20-24	25-34	35-44	45-54	45-59	60+	Quartiles		
										Q ₁	Q ₂	Q ₃
<i>Females 10 years and over</i>												
Total labour force	100.0	7.2	11.0	12.4	25.2	19.0	13.7	3.3	8.3	22.3	32.2	44.9
A Agricultural labour force	100.0	7.6	11.3	12.5	25.6	18.7	13.3	3.2	7.8	21.5	31.8	44.3
Non-agricultural labour force	100.0	6.2	10.1	12.1	24.2	19.9	14.8	3.4	9.5	23.1	33.4	46.3
C Manufacturing	100.0	5.9	11.2	12.4	25.6	19.9	13.8	3.0	8.2	22.7	32.5	44.5
D Construction	100.0	8.5	13.0	14.0	24.9	18.8	11.0	2.6	7.3	20.8	30.3	42.7
F Commerce	100.0	2.7	5.7	7.4	20.4	22.2	20.9	5.0	15.8	29.0	40.7	52.4
F-11 Wholesale trade	100.0	1.3	5.6	9.2	23.1	24.6	17.2	4.1	14.9	28.4	38.9	51.0
F-12 Retail trade	100.0	2.8	5.7	7.1	19.7	22.2	21.2	5.1	16.2	29.3	41.1	52.8
F-2 Finance, insurance and real estate	100.0	—	6.3	19.2	47.6	17.8	8.2	—	1.0	24.4	29.6	35.6
G Transportation, storage and communication	100.0	3.4	8.5	13.4	25.5	24.9	15.3	3.1	5.8	24.4	34.2	44.2
G-1 Transportation	100.0	3.4	9.6	15.5	27.6	24.4	12.8	2.3	4.5	23.4	32.3	42.2
G-2 Storage and communication	100.0	3.0	6.1	11.4	21.2	23.5	20.3	5.2	9.3	26.6	38.0	49.3
H Services	100.0	6.2	9.3	12.0	23.5	19.8	15.4	3.6	10.2	23.5	34.1	47.2
H-5 Personal services	100.0	8.2	9.5	9.5	21.5	20.0	16.7	3.7	11.0	23.4	35.2	48.3
Y Unemployed	100.0	17.9	15.9	13.5	17.5	13.6	10.3	2.3	9.0	16.7	26.0	42.0

—Continued

Table IV-5—Continued.

Bangladesh												
Industry	All ages	10-14	15-19	20-24	25-34	35-44	45-54	55-59	60+	Quartiles		
										Q ₁	Q ₂	Q ₃
<i>Males 10 years and over</i>												
Total labour force	100.0	10.3	10.5	11.3	24.2	18.3	12.9	3.9	8.6	21.4	31.9	44.8
A Agricultural labour force	100.0	11.1	10.7	10.7	23.4	18.0	12.9	4.0	9.1	21.0	31.9	45.3
Non-agricultural labour force	100.0	5.3	9.5	14.4	28.6	20.4	12.6	3.5	5.7	23.0	31.8	42.9
B Mining	100.0	4.8	9.3	15.9	31.6	20.7	12.1	2.1	3.6	23.0	30.9	41.0
C Manufacturing	100.0	5.7	11.7	17.3	28.8	17.9	10.6	2.9	5.1	21.7	29.8	40.9
C-4 Machinery	100.0	3.8	9.7	15.0	29.1	24.9	12.0	2.6	3.0	23.3	31.9	41.5
D Construction	100.0	3.5	9.5	13.3	28.3	21.2	14.4	3.8	6.1	24.0	32.9	44.1
E Electricity, gas, water, etc.	100.0	0.7	6.5	21.8	41.9	18.6	7.4	1.7	1.4	23.6	29.4	36.6
F Commerce	100.0	4.1	8.6	13.0	28.0	21.2	13.9	4.1	7.1	24.2	33.2	44.5
F-11 Wholesale trade	100.0	1.5	6.0	13.9	32.7	22.3	13.7	4.0	5.9	25.6	33.2	43.9
F-12 Retail trade	100.0	4.6	9.0	12.9	27.2	21.0	13.9	4.1	7.3	23.9	33.1	44.7
F-2 Finance, insurance and real estate	100.0	0.5	2.2	13.5	38.1	23.1	12.7	3.7	6.2	26.8	33.4	43.5
G Transportation, storage and communication	100.0	1.5	5.5	12.1	32.4	27.7	14.7	2.9	3.2	26.3	34.0	43.0
G-1 Transportation	100.0	1.5	5.5	12.0	32.4	27.9	14.7	2.9	3.2	26.4	34.1	43.0
G-2 Storage and communication	100.0	1.4	5.0	13.3	34.1	25.6	13.2	3.5	4.0	26.1	33.4	42.8
H Services	100.0	6.3	8.2	12.5	28.3	21.1	13.6	3.9	6.2	23.7	32.6	43.9
H-5 Personal services	100.0	14.0	14.8	13.5	23.2	16.8	10.8	2.6	4.3	18.2	27.8	40.2
Y Unemployed	100.0	15.0	24.1	28.4	21.5	5.8	3.0	0.9	1.4	16.6	21.4	31.5

—Continued

Table IV-5—Continued

Industry	All ages	10-14	15-19	20-24	25-34	35-44	45-54	55-59	60+	Quartiles		
										Q ₁	Q ₃	Q ₅
<i>Females 10 years and over</i>												
Total labour force	100.0	9.9	12.6	13.2	25.7	17.2	12.4	2.8	6.1	20.4	30.1	42.4
A Agricultural labour force	100.0	10.1	13.0	13.4	25.8	16.8	12.2	2.7	6.0	20.2	29.7	42.1
Non-agricultural labour force	100.0	8.0	8.1	10.6	24.7	21.8	15.6	3.9	7.3	23.7	33.9	45.6
C Manufacturing	100.0	6.5	10.0	12.6	26.4	20.6	13.9	3.5	6.4	22.9	32.4	44.0
D Construction	100.0	5.4	7.3	12.1	24.0	23.0	17.2	3.5	7.3	24.5	35.0	46.3
F Commerce	100.0	2.6	4.2	6.7	21.0	24.1	22.1	6.3	12.9	29.9	40.9	51.9
F-11 Wholesale trade	100.0	2.3	3.9	15.2	35.1	19.1	13.4	2.3	8.8	25.5	32.6	44.2
F-12 Retail trade	100.0	2.6	4.2	6.4	20.7	24.2	22.4	6.4	13.1	30.2	41.1	52.0
G Transportation, storage and communication	100.0	4.8	5.0	12.3	33.0	24.7	14.1	2.3	3.7	25.4	32.8	42.6
G-1 Transportation	100.0	3.7	4.6	12.3	35.6	25.4	14.1	2.0	2.6	25.7	32.8	41.9
G-2 Storage and communication	100.0	6.8	8.0	14.4	25.5	22.1	13.7	2.7	6.8	23.0	32.7	43.7
H Services	100.0	11.5	6.0	8.4	22.9	23.3	16.7	3.9	7.3	24.0	35.0	46.2
H-5 Personal Services	100.0	13.4	5.2	6.9	22.4	24.2	17.3	3.9	6.7	24.2	35.4	46.2
Y Unemployed	100.0	29.6	14.0	14.6	15.4	6.7	7.0	2.8	9.9	13.0	21.7	36.5

Sources: Population Census of Pakistan, 1961, Vol. 4, Table 9; Census Bulletin No. 5, Table 3.

older retirement age in agriculture. Personal services, otherwise identical to agriculture, differs in its representation of older workers; in this respect it more closely resembles the other non-agricultural industries. This phenomenon is more obvious in Bangladesh than Pakistan. Possibly these persons join agriculture when, as they grow older, the demand for their services declines. But retail trade identifies with agriculture in its representation of older workers; as observed earlier, retail trade, unlike personal services, is dominated by own-account workers.

Industry variations in the age structure of female workers in both countries are very different from those of males. The median age of females in agriculture is lower than the one in non-agricultural industries. The proportions of ages 20-34 and 20-44 in agriculture are identical with those in most non-agricultural sectors, a fact which suggests the absence of the movement from agriculture to non-agricultural activities at any age. This is another evidence of social and cultural factors overriding economic influences. In most of the non-agricultural industries and particularly in commerce, high third quartile values for females are observed along with a high median age. These are a product of the social and cultural set-up, particularly in urban areas, which discourages young women from participating in activities which involve exposure to males other than those of their family.

Industry of Male Workers in Different Age Groups

Some important economic implications can also be discerned from "age profiles" of workers in different industries. Figure IV-1 depicts the age profiles or percentage of total economically active males in each age group in some selected industries.¹⁸ To give a basis for comparisons, an horizontal line is drawn showing the overall share of the industry in the total male working force.

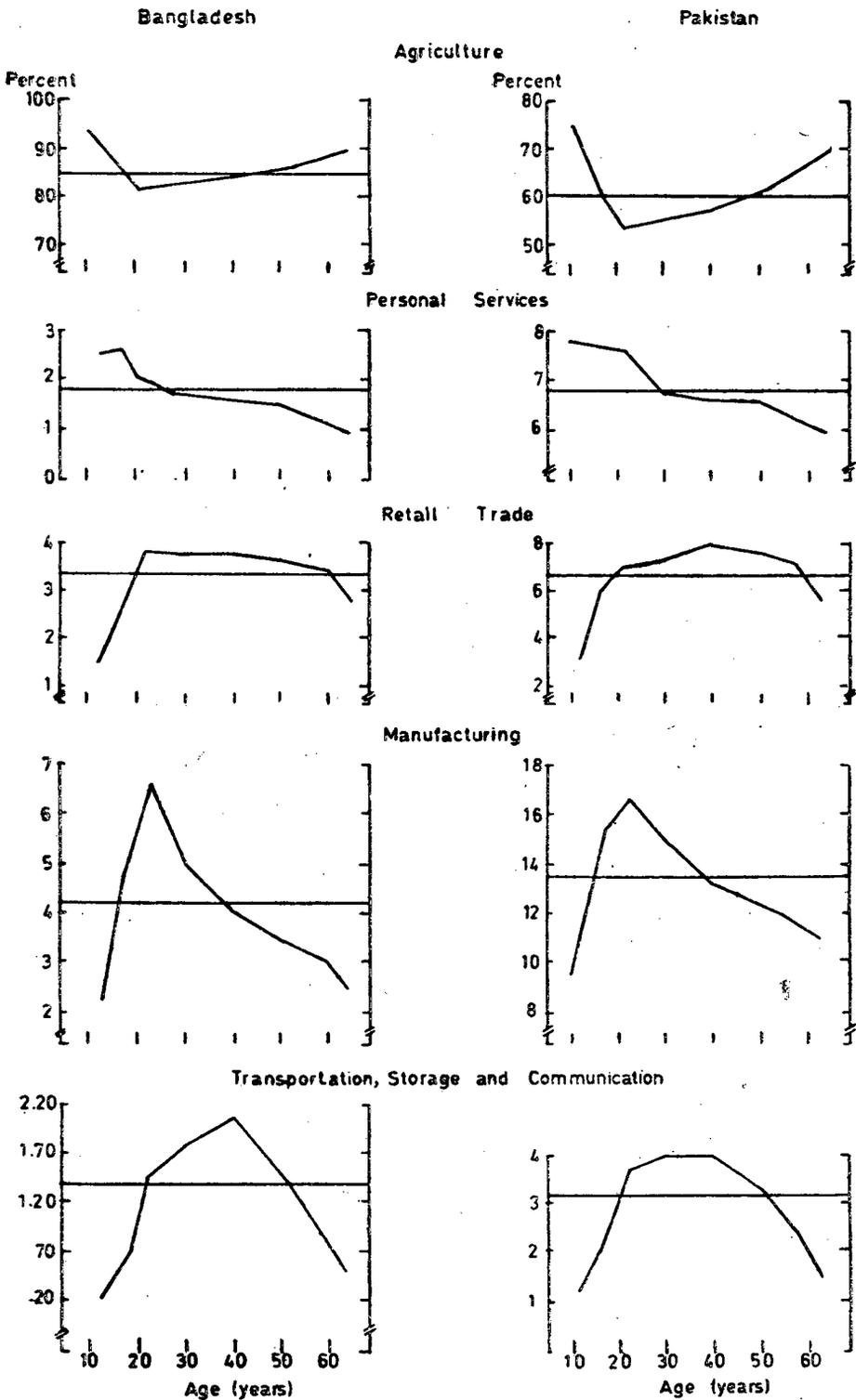
As expected from the above findings regarding the age structure of industries, age profiles of agriculture are U-shaped in both countries (the inversion of which will give the age profile for the non-agricultural working force). The age profiles of agriculture provide some clues to historical changes. There is an over-representation of age above 50, particularly in Pakistan, which may reflect the declining engagement of labour force in agriculture in recent times. However, while the percentage of agriculture also rises at ages above 50 in Bangladesh, the proportion of agricultural labour force has not declined since 1951 (see Table IV-9). This suggests that factors other than the historical trend, such as retirement age, affect age profiles. In both countries, the majority of the new entrants into the labour force are still being engaged in agriculture, implying the continuation of agriculture as the major source of living in the next decade or so.

Figure IV-1 illustrates the gradual shift in the shapes of the curves. Retail trade shows a more marked deviation from agriculture than does personal services. Manufacturing and transportation including storage and communication show completely different age profiles.

There is an important difference between the curve for manufacturing and the one for transportation, *etc.* The curve for manufacturing is significantly negative

¹⁸Due to the over-riding influence of social and cultural factors in the reporting of female economic activity, the corresponding comparisons for female workers may be of limited value.

Figure IV 1: Percentage Shares of Different Industries of the Total Economically Active Males in Each age Group



Source Same as in Table IV-5

skewed, showing a very sharp increase of the industry's share of workers in the early prime adult age groups. This may be the effect of the relatively rapid growth of manufacturing industry in the few years prior to the 1961 census. On the other hand, the curve for transportation, *etc.*, is more bell shaped, particularly in Bangladesh, inclining towards positive skewness. This may be due to two factors. First, there may be a *cohort effect*, *i.e.*, the workers in older ages may remain engaged in this industry and proportion of younger entries is less than their share of the total labour force. This seems plausible as, during 1951—1961, transportation, *etc.* did not significantly improve its share of labour force in Pakistan and declined in importance in Bangladesh (see Table IV-9). Secondly, most of transportation activity may require relatively much vocational training and technical experience, keeping the demand favourable for older workers. One may presume that this situation will change during the coming years of development with a rapidly expanding infrastructure leading to larger transportation facilities and with the spread of facilities for both general and technical education.

The age profile (not given in Figure IV-1) for the sub-category of machinery resembles that for total manufacturing; the sub-categories of transportation and wholesale trade are similar to that of transportation including storage and communication, with wholesale trade even more skewed to the right.

Regional Labour Force Patterns and Concentrations of Industries, 1961

In this section, we examine the geographical concentration of different types of economic activities in order to determine the geographical spread of economic development. Such analysis is useful for regional economic planning.

Regional Patterns in the Industrial Composition of Labour Force by Major Geographical Divisions.

Taking the proportion of male labour force participants in non-agricultural industries as a rough measure of the level of economic achievement, one can observe a rather wide dispersion of economic development in Table IV-6. The range of percentages of male labour force in non-agricultural economic activity is large, from 9.9 for Rajshahi in Bangladesh to 93.4 percent for Karachi division in Pakistan. Even after deleting Karachi as an extreme case, the range remains pronounced—from 9.9 percent for Rajshahi to 49.6 percent for the Lahore division. The economic disparity between the two countries comes into sharp focus as the least developed region in Pakistan, Kalat (with 21 percent of its male labour force classified as non-agricultural) seems to be relatively more industrialized than any region in Bangladesh. But, within Pakistan, which has earlier been classified as semi-industrialized,¹⁹ only 6 out of the 12 divisions can be so categorized.

The industrial distribution of the non-agricultural labour force by major geographical administrative divisions (from here on referred to as divisions or regions)

¹⁹We are taking a region as semi-industrialized if 35 percent or more (but less than 60 percent) of its male labour force is in non-agricultural industries. As mentioned before, this was the criterion adopted in the study; U.N., Department of Economic and Social Affairs; *Demographic Aspects of Manpower; Report I, Sex and Age Patterns of Participation in Economic Activities*, Population Studies No. 33 (New York, 1962).

in Table IV-6 explains some of the important differences observed earlier between the two countries. For example, Sargodha, Lahore and Multan divisions in Pakistan are chiefly responsible for the country's higher relative share of manufacturing in total non-agricultural labour force. In absolute terms, these three divisions account for more than 59 percent of the total manufacturing industry.

Table IV-6 shows that the relative labour force shares of manufacturing and services, the two major sources of non-agricultural employment for males, vary greatly across regions. There exists an almost uniform substitution between these two industries, particularly in Pakistan. If the proportion of manufacturing in a region is much above corresponding country proportion, the proportion of services in the non-agricultural labour force is much below and vice versa. This phenomenon is particularly evident in Khairpur, Dera Ismail Khan, Hyderabad, Peshawar, Multan, Quetta and Sargodha divisions.

Commerce, the third largest category in the non-agricultural labour forces, accounts for a higher percentage of male workers in every Bangladesh region than in any in Pakistan, and so does its main component, retail trade (with the possible exception of Hyderabad). On the other hand, construction, a more modern sector, accounts for a higher proportion of non-agricultural activity in the Pakistani regions than in any in Bangladesh with the possible exception of Chittagong.

In agreement with earlier analysis, the industrial composition of the female labour force, unlike that of males, does not appear to be primarily a function of the availability of economic opportunities. Regional industrial structures are affected to varying degrees by the set of social and cultural factors which regulate the reporting of female activity (see Chapter 2, Section 4). This is partly reflected in a different rank ordering of the regions by the proportion of the female labour force in non-agricultural industries than by the male proportion. Omitting Karachi, the range of the proportion of females in non-agricultural activities is from 4.2 percent for Chittagong in Bangladesh to 52.6 percent for Kalat in Pakistan; whereas Kalat ranked lowest within Pakistan for its proportion of male labour force in non-agriculture. Also, the reporting of about one half of the total female labour force in Khulna as in non-agricultural pursuits warrants an explanation other than economic. However, considering only the non-agricultural labour force, manufacturing and services constitute the bulk of the women workers in every region.

Regional Concentration of Industries

Different measures can be used for determining the degree of similarity (or dissimilarity) in industrial structure of the labour force among regions and, by the same token, the extent of geographical concentration of different industries. One measure is the "concentration index" computed as the ratio of the proportion of an industry in a region to the corresponding average value for the respective country. Such a measure may give a closer approximation of the geographical spread or concentration of economic opportunities than, for example, the percentage of non-agricultural labour force in each region.

It is not surprising to see more uniformity in the industrial structure among regions in Bangladesh than in Pakistan. Obviously, with a very small non-agricul-

Table IV-6

Industry Distribution of Labour Force by Major Geographical Divisions, 1961

Industry/Division	Pakistan							
	Kalat	Khairpur	Bahawalpur	Dera Ismail Khan	Kalat	Khairpur	Bhawalpur	Dera Ismail Khan
	<i>Males</i>				<i>Females</i>			
Total Labour force	154,518	949,936	764,908	197,733	6,314	174,973	89,533	13,633
A Agricultural labour force	122,081	701,043	563,575	134,547	2,993	159,427	76,327	9,796
Percent of total labour force	79.0	73.8	73.7	68.0	47.4	91.1	85.2	71.9
Non-agricultural labour force	32,437	248,893	201,333	63,186	3,321	15,546	13,206	3,837
Percent of total labour force	21.0	26.2	26.3	32.0	52.6	8.9	14.8	28.1
Non-agricultural labour force	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
B Mining, etc.	15.2	0.1	—	—	0.2	—	—	—
C Manufacturing	14.9	24.5	33.4	22.3	73.2	52.8	50.1	51.8
C-4 Machinery	0.8	1.6	0.9	1.2	—	—	—	—
D Construction	7.1	9.1	5.1	6.4	0.4	5.1	1.7	1.4
E Electricity, etc.	0.3	0.3	0.3	0.9	—	—	—	—
F Commerce	15.9	21.7	20.0	20.1	3.9	3.2	5.1	4.8
F-12 Retail trade	15.0	19.3	16.7	18.2	3.8	2.9	4.9	4.6
G Transportation, etc.	12.0	8.9	6.9	7.9	0.3	1.4	1.5	0.5
H Services	31.0	33.4	33.6	36.0	20.5	36.2	40.3	39.7
H-5 Personal services	12.7	17.7	19.6	14.3	16.1	24.5	26.8	24.3
X Activities N.A.D.	2.4	0.6	0.3	0.8	1.4	0.9	1.0	0.8
Y Unemployed	1.3	1.4	0.4	5.7	0.1	0.6	0.2	0.9

—Continued

Table IV-6—Continued

Industry/Division	Pakistan							
	Hydera- bad	Peshawar	Multan	Quetta	Hyder- abad	Peshawar	Multan	Quetta
	<i>Males</i>				<i>Females</i>			
Total labour force	1,036,499	940,451	1,979,116	191,679	97,375	103,057	191,791	3,440
A Agricultural labour force	695,992	621,049	1,233,052	115,440	78,522	84,263	121,980	1,982
Percent of total labour force	67.2	66.0	62.3	60.2	80.6	81.8	63.6	57.6
Non-agricultural labour force	340,507	319,402	746,064	76,239	18,853	18,794	69,811	1,458
Percent of total labour force	32.8	34.0	37.7	39.8	19.4	18.2	36.4	42.4
Non-agricultural labour force	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
B Mining, etc.	0.2	—	—	6.2	—	—	0.0	0.1
C Manufacturing	26.2	23.2	36.6	14.2	44.8	32.6	62.6	15.6
C-4 Machinery	1.5	1.5	1.0	3.9	—	—	—	—
D Construction	7.5	5.1	6.2	7.3	5.9	0.3	1.4	0.4
E Electricity, etc.	0.4	0.9	0.3	0.6	—	—	0.0	0.1
F Commerce	22.1	19.4	18.4	16.1	4.6	5.8	2.8	1.3
F-12 Retail trade	20.4	17.6	15.8	14.4	4.5	5.7	2.6	1.2
G Transportation	7.7	6.8	6.9	11.6	0.7	0.2	0.4	3.0
H Services	34.2	34.5	27.3	42.4	43.1	57.4	29.9	79.3
H-5 Personal services	20.5	18.5	18.3	14.0	29.1	43.6	21.2	22.8
X Activities N.A.D.	0.5	1.6	0.4	1.0	0.3	1.9	0.6	0.2
Y Unemployed	1.3	8.3	3.8	0.6	0.5	1.7	2.3	0.3

—Continued

tural sector, conditions have not yet been created in Bangladesh which generate a concentration of modernization in a few regions. This concentration, particularly in the beginning stages of industrialization, is largely a result of the localization of expanding infrastructure in a few regions.

Table IV-7 shows a close proximity between the proportion of agricultural labour force in each region and the corresponding weighted average for Bangladesh. In the non-agricultural sector, some variation in the concentration index is observed. Rajshahi²⁰ appears to be the region comparatively worst off, with an index score of 74. As a contrast, substantial geographical concentration of industries is observed in Pakistan. Eight of the 12 divisions have an equal or larger proportion of their labour force in agriculture than the country average (and five of these have proportions at least 20 percent higher than this average). Only three divisions, namely Sargodha, Lahore and Karachi, engaged a larger share of non-agricultural labour force than the country average.

In both countries the maximum concentration among non-agricultural industries is observed in "mining and quarrying" with index scores varying from 2 to 1431. Primarily a function of the location of mines, this activity is mainly located in Chittagong division in Bangladesh and Kalat, Quetta and Rawalpindi divisions in Pakistan. The second most concentrated industry in Pakistan is machinery manufacturing for which three divisions, namely Quetta, Lahore and Karachi have proportions about one and three-quarters to three and one-half times larger than the Pakistani average. It is important to compare machinery in the context of total manufacturing, which, because it includes a large traditional manufacturing section, shows a much more even geographical distribution. In both countries, the minimum regional variations are observed in services, with the less economically important sub-section of personal services showing even less variation.

The data in Table IV-7 seem to be indirectly refuting Colin Clark's renowned hypothesis which states that with economic development, the proportion of agricultural labour force declines and that of the secondary sector increases initially and, at a later stage, the share of the tertiary sector expands relative to that of the secondary. This hypothesis is based on the theory that the *relative* demand for agricultural products falls with increasing income while that for the manufacturing products rises initially and then falls in favour of services. Also the growth of labour productivity in the tertiary sector is lower than in the secondary.²¹ Ranking the regions in Pakistan by the percentage of non-agricultural labour force, we find that in the regions with percentages below the weighted average for the country, services and particularly commerce in the tertiary sector increase their labour force shares more rapidly with the increasing of the rank than, for example, manufacturing in the secondary sector. It seems that regions in the initial stages of industrialization first experience growth in the tertiary sector and/or this sector expands faster than the secondary sector.

²⁰Statistically, with a very small base, more variation will be observed in the non-agricultural sector than in the agricultural sector which includes a predominant proportion of the labour force.

²¹Colin Clark, *The Conditions of Economic Progress* (London: Macmillan and Co., Ltd., 1960), pp. 493-494. Clark includes agriculture and mining in the "primary sector," manufacturing and construction in the "secondary sector" and electricity, *etc.*, commerce, transportation, *etc.*, and services in the "tertiary sector."

Table IV-7

Concentration Index of the Labour Force by Industry, 1961

Division/Industry*	(A)	Total non-agricultural industries	(B)	(C)	(C-4)	(D)	(E)	(F)	(F-12)	(G)	(H)	(H-5)
<i>Pakistan</i>	100	100	100	100	100	100	100	100	100	100	100	100
Kalat	130	55	1,799	34	19	71	30	47	50	85	55	42
Khairpur	128	59	16	46	41	102	33	69	70	70	65	62
Bahawalpur	125	63	2	65	24	60	32	68	65	58	70	74
Dera Ismail Khan	114	79	4	57	42	94	136	87	90	83	94	69
Hyderabad	114	79	31	64	51	114	54	96	101	82	90	97
Peshawar	113	81	25	58	54	77	145	86	89	73	95	94
Multan	104	94	2	109	38	106	61	92	90	85	85	102
Quetta	100	99	1,431	42	170	138	111	90	91	161	140	83
Rawalpindi	101	98	300	91	71	91	100	71	75	72	99	95
Sargodha	97	104	109	133	47	84	74	96	95	71	83	95
Lahore	84	124	10	134	272	97	160	129	115	135	120	120
Karachi	11	233	18	193	355	201	322	237	226	335	185	134
<i>Bangladesh</i>	100	100	100	100	100	100	100	100	100	100	100	100
Rajshahi	104	74	49	82	113	50	28	69	72	70	77	62
Chittagong	101	92	185	75	96	125	159	86	85	118	99	113
Khulna	98	113	92	114	89	106	85	120	122	94	114	107
Dacca	97	121	50	133	101	106	97	127	124	105	110	110

Sources: Same as Table IV-6.

* (A) Agricultural labour force; (B) Mining and quarrying; (C) Manufacturing; (C-4) Machinery; (D) Construction; (E) Electricity, gas, water and sanitary services; (F) Commerce; (F-12) Retail trade; (G) Transportation, storage and communication; (H) Services; (H-5) Personal services.

Seeing the predominance of retail trade and personal services in the tertiary sector, it may be hypothesized that the expansion of employment in this sector is mainly a consequence of limited growth of employment opportunities in industry. We are not discounting the effective demand factor as, particularly in the case of personal services where the workers are primarily employees, there must be a demand to which they respond. But one wonders if most of these workers (given their generally lower earnings) would not shift to better paying jobs in the secondary sector if such jobs were available. It is a widely held view that in developing countries, because of a lack of industrial development, the non-agricultural labour force find employment to greater extent in the tertiary sector than in the secondary.²²

On the other hand, dividing the labour force into Kuznets industrial sectors,²³ we observe that of the 6 most industrialized divisions (with 35 percent or more of the male labour force in the non-agricultural sector) four divisions, namely Multan, Rawalpindi, Sargodha and Lahore, show a higher proportion in the secondary sector than in the service sector. For the other two, the service sector in Karachi is more substantial (47 percent to 41 percent) because of its very high level of modernization and in Quetta there is a large military establishment.

An inference from the above observations is that in the very beginning stages of industrialization, service or tertiary sector will grow faster than industry or secondary sector; but at higher level of industrial achievement, growth of the latter in Pakistan will be larger, though the ratio of the former to agriculture will continue to grow.

Table IV-8 summarily evaluates the situation. A few more relevant measures of *variation* are employed for quantifying the degree of spread of a region's industries about the corresponding average value for the respective country. The measure of "relative deviation"²⁴ gives true variation, independent of two absolute sizes involved. Another relative measure used here is the "coefficient of localization,"²⁵ which gives the total number of percentage points by which the regions would have to change their shares of a particular industry to converge to the average weighted national proportion of that industry.

²²International Labour Organization, *Employment Objectives and Policies*. Report I, Preparatory Technical Conference on Employment, 1963 (Geneva: U.N., 1963), p. 15.

It is true, though, that in countries with highly developed industry, there are often more jobs in tertiary sector than in industry. This seems to be the case in Australia, Canada, Japan and the United States but not in the Federal Republic of Germany, Great Britain, Italy, Sweden or Switzerland.

²³Kuznets' sector of "agriculture" includes cultivation, fishing, forestry and trapping. "Industry" includes mining, manufacturing, construction, electricity, etc., and transportation, storage and communications. "Services" is composed of commerce, personal, business, professional and government services. S. Kuznets, *Modern Economic Growth: Rate, Structure and Spread* (New Haven: Yale University Press, 1966), p. 93.

While the definitions we used to construct the three sectors coincide with those of Kuznets, "industry" and "secondary" sector are used as synonyms. So are "services" and "tertiary" sector.

²⁴"Relative deviation" for a particular industry is the mean absolute deviation divided by the average proportion in that industry. Empirically, the mean absolute deviation equals 4/5 of the standard deviation. With this relationship, another measure can be adopted, free of the bias of absolute size, namely, coefficient of variation = standard deviation/average proportion.

²⁵"Coefficient of localization" in a particular industry is calculated as 1/2 of the summation of the absolute deviations between regions' percentage shares of that industry and percentage shares of the total labour force.

Table IV-8

Measures of Dispersion and Coefficient of Localization of the Labour Force by Industry and Sex, 1961

Industry Sector	Relative Deviation	Coefficient of Localization
<i>Pakistan</i>		
Agriculture	19.7	7.9
Industry	34.3	14.2
Mining and quarrying	327.5	62.8
Manufacturing	42.7	17.0
Machinery	84.3	41.8
Construction	24.1	8.8
Electricity, etc.	57.6	26.1
Transportation etc.	46.0	19.5
Service	30.5	12.2
Commerce	30.3	12.2
Retail trade	27.2	9.4
Govt., personal and other services	31.6	12.3
Personal services	24.6	8.2
<i>Bangladesh</i>		
Agriculture	2.8	1.3
Industry	17.3	8.8
Mining and quarrying	48.4	27.1
Manufacturing	22.5	12.0
Machinery	7.0	3.0
Construction	21.8	10.8
Electricity, etc.	37.5	19.0
Transportation, etc.	14.9	7.4
Service	17.1	8.1
Commerce	22.8	11.2
Retail trade	22.5	10.8
Govt., personal and other services	12.3	5.5
Personal services	17.0	8.2

The much lower values of these two measures within Bangladesh than the corresponding one for Pakistan confirm our earlier contention about the close relationship between the absence of industrialization and the evenness of the regional industrial structure.

Looking into the relative dispersion and the coefficients of localization by industry, we observe the minimum degree of dissimilarity in the agricultural sector. Higher variations are observed in industry than in the services sector. In fact, particularly in Bangladesh, the coefficients of localization for personal services and retail trade are similar to that of agriculture, thus validating our earlier arguments that personal services and retail trade are the counterparts of agriculture in the non-

agricultural sector. Mining, manufacturing, electricity, etc., and transportation, etc., all in the industry sector, show maximum dispersion.

Changes in the Industrial Structure and Components of Economic Growth*

With information on income or production as well as labour activity by industry, we can employ the concepts of labour productivity and structural change to evaluate the performance of an economy during a specified period. However, such results should be interpreted with some caution given the inherent data problems and the arbitrariness involved in income statistics by industrial origin.²⁶

In this section, we will first compare an industry's relative share in the labour force to its relative share in total product and the changes in the two over the 1951—1961 census decade, and second, quantify the sources of growth of production during the same period in terms of the product performance of different industries as well as of the whole economy in each country.

Industrial Structure of the Labour Force and Gross Domestic Participation Income, 1951—1961.

The concept of "participation income" is used for assigning production or income by industrial origin. This concept measures only income resulting from direct participation in labour activity and hence excludes transfer and property incomes. Recipients of these latter incomes are not necessarily members of the labour force. Also data on the industrial origin of these incomes are not available. As such, participation income gives a better measure of inter-sectoral differentials in product per worker than does total income or national income.²⁷ Since gross domestic participation income (from here on referred to as GPY) is more than nine-tenths of national income, it is safe to assume that the industrial distribution of national income will be very similar to that of GPY. The GPY is measured in constant factor prices of 1959-60 and is adjusted for differential price trends in the products of different sectors.

Table IV-9 provides percentage industry distributions of the total labour force and GPY at the two census dates. Both countries were still predominantly agricultural in 1961. Bangladesh seems to have become even more so in one respect, as its already high proportion of labour force in agriculture in 1951 (84.2 percent) rose a little higher in 1961 (85.7 percent), but the relative share of agriculture in Bangladesh total participation income declined by about five points. In evaluating these statistics, however, it should be remembered that female participation in economic

*This section is based on the paper; Ghazi M. Farooq, "Economic Growth and Changes in the Industrial Structure of Income and Labour Force in Pakistan," *Economic Development and Cultural Change* Vol. 21, No. 2, January 1973, pp. 293-308.

²⁶On the reliability of income estimates for Pakistan, see Taufiq M. Khan and A. Bergan, "Measurement of Structural Change in the Pakistan Economy: A Review of the National Income Estimates, 1949/50 to 1963/64," *Pakistan Development Review*, 6, no. 2, Summer 1966, pp. 168-174.

²⁷For a very useful discussion of the concept of participation income and its advantages and of the problems associated with the distribution of national income by industry, see Simon Kuznets, "Quantitative Aspects of the Economic Growth of Nations. II. Industrial Distribution of National Product and Labor Force," *Economic Development and Cultural Change* 5 (1956-57), pp. 3-4, and "III. Industrial Distribution of Income and Labour Force by States, pt. 2 (1957-58), pp. 2-4.

activity in 1961 was reported to be substantially larger than that in 1951 and that most of this reported increase was concentrated in agriculture. So it seems that the income per worker, or what is usually referred to as overall or average product per worker (*i.e.*, total output of the sector [Qi] divided by the total employment in that sector [Li]),²⁸ in agriculture was inflated in 1951. An allowance for this must be made in interpreting the following results.²⁹ However, the crude male activity rate did not change significantly.

The share of agriculture in total income in Bangladesh in 1961 was twenty percentage points lower than its share in the total labour force. The decline in the income share of agriculture even after accounting for the underreporting of female economic activity in 1951 was not entirely the result of relatively greater increases in productivity in other sectors. Infact, the average product per worker in agriculture contracted from an already low figure of Rs. 770 in 1951 (the true figure may be lower than this) to Rs. 664 in 1961.³⁰ Given the disproportionately heavy weight of agriculture in the Bangladesh economy, this explains the decline in average income per worker for the whole economy to Rs. 885 in 1961 from Rs. 945 in 1951. (Correspondingly, the average per capita gross income fell from Rs. 296 in 1950-51 to Rs. 287 in 1960-61).³¹

Pakistan, on the other hand, seems to have improved its economic situation during this period. The proportion of agricultural labour force declined by an impressive six points. Johnston reports that between 1951 and 1961, non-farm employment increased at a rate of about 4.5 percent per annum—a rate which, he contends appears to have been exceeded only by Taiwan in the post-World War II period.³² But this remarkable expansion in non-agricultural employment did not prevent an absolute increase in the size of the agricultural labour force. While agricultural output also increased from Rs. 6,768 million in 1950-51 to Rs. 7,695 million in 1960-61,³³ this increase was not sufficient and the average income per

²⁸In the usual production-function-type relationships, a change in labour input is directly related to a change in output. However, depending on marginal productivities, the output may not expand by the same proportion as labour force, leading to a decline in average product. It is also possible that, with technological change, the production function may shift and the marginal productivity of labour may rise, leading to proportionately larger increases in output than in labour force.

²⁹Comparatively, a higher proportion of female workers are in agriculture, with most of them categorized as unpaid family workers. This, in part, contributes to the relatively lower average income per worker in agriculture. In a recent study, Kuznets tried to solve this problem by assigning a weight of 0.2 for women workers in agriculture (and 0.6 for women outside agriculture). Simon Kuznets, *Economic Growth of Nations: Total Output and Production Structure* (Cambridge, Mass.: Belknap Press of Harvard University Press, 1971), pp. 52-57. In Pakistan, however, as in other developing countries, there is substantial labour force participation among males of young and old ages, whose productivity may be lower than that of male workers in the prime working ages. So a proper weighing scheme should also include these groups, and an efficient criterion for assigning weights could be the earning differentials among them (*e.g.*, see Edward F. Denison, *Why Growth Rates Differ: Postwar Experience in Nine Western Countries* (Washington, D.C.: Brookings Institution, 1967), pp. 71-73). In the absence of such data on earnings in the present case, it seems advisable not to apply any arbitrary weighing scheme. While the major conclusions of the study should not be affected, one should keep in mind in the analysis of intersectoral income per worker differentials, that there are comparatively more women and younger and older male workers in agriculture than in the other sectors.

³⁰Only workers actively engaged, *i.e.*, employed, are included for computing average products per worker.

³¹Khan and Bergan, *op. cit.*, Table A-2.

³²Bruce F. Johnston, "Agriculture and Economic Development: The Relevance of the Japanese Experience," *Food Research Institute Studies*, 6, 1966, p. 274.

³³Khan and Bergan, *op. cit.*, Table A-3.

Table IV-9

Percentage Industrial Distribution of Labour Force and Gross Domestic Participation Income (GPY) 1951—1961

Industrial Group	Pakistan				Bangladesh			
	Labour Force		GPY		Labour Force		GPY	
	1951	1961	1950-51	1960-61	1951	1961	1950-51	1960-61
Agriculture	65.4	59.6	56.7	47.3	84.2	85.7	69.2	64.4
Industry	13.3	18.6	16.3	24.5	6.6	6.1	9.9	14.4
Mining and quarrying	0.1	0.2	0.2	0.5	3.9	0.01	..	0.01
Manufacturing	9.7	13.5	8.7	13.3		4.4	4.1	6.7
Construction		2.1	1.6	3.8		0.5	0.4	1.2
Electricity gas, etc. }	1.8				1.8			
Transportation, etc.		0.2	0.2	0.1		0.1	0.1	0.1
Service	1.7	2.7	5.4	6.3	1.6	1.1	5.3	6.3
Commerce	18.1	19.6	27.0	28.2	8.3	7.5	20.9	21.2
Government, personal and other services	6.9	7.1	13.5	14.3	3.9	3.4	12.4	6.9
Activities not adequately described }	11.2	12.5	13.5	14.0	4.4	4.1	8.5	9.0
Unemployed	0.7	0.7	..	..	0.3	0.4	..	..
	3.2	1.5	..	..	0.7	0.3	..	..
Total (%)	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Total*	9,506,344	12,556,402	11,932	16,267	12,886,340	16,870,988	12,058	14,896

Sources: Appendix Table 1 and Khan and Bergan, Table A-1, A-2, and A-3.

*1961 labour force figures exclude economically active population in age group ten to eleven; GPY is in million.

worker in this sector declined to Rs. 1,029 in 1961 from Rs. 1,090 in 1951 (though the true 1951 level may have been somewhat lower for the same reasons mentioned for Bangladesh). This also explains the greater decline in the share of agricultural income in GPY (9.4 points) than in the share of agricultural labour force (5.8 points). However, increases in productivity, primarily in the industry sector, where growth far surpassed that of other sectors, not only compensated for the decline in agriculture, if it were real, but also raised the average worker income from Rs. 1,274 in 1951 to Rs. 1,315 in 1961 (and per capita gross income from Rs. 347 in 1950-51 to Rs. 370 in 1960-61).³⁴

The industry sector in both countries experienced the most dynamic growth — increasing its percentage share of GPY by almost the same amount as the decrease in the relative share of agriculture. The sub-sector of manufacturing was the major contributor. In Pakistan, the industry sector (mainly manufacturing and transportation, storage, and communication) was responsible for employing more than seven-tenths of the workers who would have been in agriculture if the proportion of agricultural labour had remained unchanged between 1951 and 1961.

Two measures derived from Table IV-9, namely, “coefficient of differential growth” and “coefficient of absorption,” can be used for assessing the dynamics of the overall employment situation. The coefficient of differential growth of a sector is calculated as the excess (positive or negative) of the annual compound growth rate of labour force in the sector over the growth rate of total labour force or employment. This coefficient measures the speed of change in the proportionate share of a sector in the total labour force independent of growth in the latter. The coefficient of absorption is calculated as the ratio of the annual growth rate of labour force in a sector to the growth rate of total labour force and, as such, shows the scope of sectoral absorption of new entrants into labour activity. Given the annual growth rate of total labour force between 1951 and 1961 as 2.88 percent in Pakistan and 2.72 percent in Bangladesh, coefficients for different sectors are given in Table IV-10.

If the patterns revealed in Table IV-10 persist, the current ratio of agricultural to non-agricultural employment of 60:40 in Pakistan will be reversed to 40:60 within twenty-five years. In Bangladesh, on the other hand, the performance of the economy in the last decade and the size of the agricultural sector demand gigantic efforts to quicken the pace of industrialization. For example, at the present growth of labour force, if the growth is to be entirely absorbed by the non-agricultural sector (*i.e.*, absolute number in agriculture remaining constant), then the rate of increase of non-agricultural employment in Bangladesh should be 19 percent per annum compared with 7 percent in Pakistan.³⁵

In the early stages of industrialization, there must be extra emphasis on developing the economic infrastructure; otherwise, severe bottlenecks will reduce the speed of development. Taking the subdivisions of utilities, construction, and transportation, storage, and communication in the industry sector as a rough measure

³⁴*Ibid.*, Table A-3.

³⁵This rate is calculated as the ratio of the annual labour force growth to the proportion of labour force, non-agricultural. This rate will decline as the proportion of non-agricultural labour force increases. For details, see F. Dovring, “The Share of Agriculture in a Growing Population,” *Monthly Bulletin of Agricultural Economics and Statistics*, 8, no. 8/9, August/September 1959, pp. 3-11.

of infrastructure, it can be observed from Table IV-9 that Bangladesh fares even worse than indicated by the industry sector as a whole. The total labour share in these infrastructure-type industries declined from a very low 2.6 percent in 1951 to 1.7 percent in 1961. This trend denotes a special area of attention for the economic planners. The situation is relatively comfortable in Pakistan: the labour share of these subdivisions increased from 3.4 percent in 1951 to 5.9 percent in 1961.

Table IV-10

Coefficients of Employment Dynamics by Sector, 1951—1961

	Coefficient of differential growth (%)	Coefficient of absorption (%)
<i>Pakistan</i>		
Agriculture sector	-1.13	0.61
Industry sector	3.27	2.14
Service sector	1.02	1.35
<i>Bangladesh</i>		
Agriculture sector	0.51	1.06
Industry sector	-0.81	0.70
Service sector	-0.98	0.64

Finally, the share of the service sector in GPY in both countries also increased but only slightly. In fact, in Pakistan, this increase was less than the increase in this sector's share of labour force. But through 1961, the workers in this sector maintained their earning differential at a little less than one and one-half times that of the average worker in Pakistan and two and three-quarters times that in Bangladesh. In the light of the dominance of retail trade in the subsector "commerce" and the substantial magnitude of personal services in the subsector "government, personal, and other services," evidence of the highest product per worker being in this sector is intriguing and requires explanation.

An intuitive explanation is that such high-paying pursuits as government and professional service jobs are included in services. Earning differentials in favour of such jobs are particularly pronounced because of their high educational requirements. There is usually a very high opportunity or scarcity value attached to high-level education in a society of mass illiteracy. Hence, the high level of earnings in this sector as a whole may be indirectly related to its concentration of persons with a high level of education.³⁶ And, using the same line of argument, the very low supply

³⁶In Pakistan, 46 percent of the total males with education of matriculation level (grade 10) and higher and a much larger percentage (74 percent) of males with a baccalaureate degree or higher are in the service sector. A larger concentration is observed in Bangladesh (with corresponding percentages of 52 and 82).

of high-level manpower in Bangladesh³⁷ may lead to even higher earning differentials in favour of the above-mentioned jobs there than in Pakistan. However, as of 1961, workers with education of matriculation level and higher constituted 10 percent of the total workers in the service sector in Pakistan, and workers with baccalaureate or higher degrees constituted only 2 percent. Corresponding percentages in Bangladesh were 12 and 2. Even if it is assumed that these workers had very high earnings (though within reasonable limits), their percentages were too low to fully explain the high earning differential in favour of this sector. More important the incomes for defense services are also included in the incomes for the subsector "government, personal, and other services." This will inflate the income per worker in the services sector since persons in defence services are excluded from the labour force. Unfortunately, the census does not report the armed forces, and similarly, incomes for defence services are not reported separately. Even after accounting for this statistical error, it is likely that a person even in personal services or retail trade may, on the average, command some premium over the one in agriculture, though there does not seem to be any empirical evidence in support of this proposition.

These intersectoral earning differentials seem to be consistent with the ones usually observed in developing countries.³⁸ The earning differential, particularly in Pakistan, between the service sector and the industry sector was significantly reduced over the 1951-61 period (the average income in the service sector in 1961 was only 10 percent higher than that in industry). It is noteworthy that intersectoral earning differentials in 1961 were much smaller in Pakistan than in Bangladesh. This is in line with the well-known proposition tested in two studies by Fisher and Clark³⁹ that differences in earnings, while relatively wide at early stages of industrial development, narrow with increased industrialization.⁴⁰

Components of Economic Growth

The aim here is not an exhaustive explanation of the factors responsible for economic growth; rather, economic growth will be studied only from the labour force side, that is, in terms of how much of the growth can be explained by changes in labour supply and by changes in the structural composition of the labour force.

Using a simple formulation of the following type:

$$Q_i = L_i P_i,$$

where Q_i = output of industry i , L_i = labour employed in industry i , and $P_i = Q_i/L_i$ = average product per worker in industry i , the change in output of an industry can be decomposed into (1) the change in labour supply and (2) the change in average product per worker. The formula for computing these two components is:

$$Q_{i,t}/Q_{i,0} = (L_{i,t}/L_{i,0}) (P_{i,t}/P_{i,0}).$$

³⁷There are only 267,000 males with matriculation and higher educational attainment in Bangladesh, as compared with 582,000 in Pakistan. The difference is even more pronounced at the higher education level; compared with 70,421 in Pakistan, only 35,385 males in Bangladesh have baccalaureate or higher degrees.

³⁸Kuznets, *op. cit.*, 1957-58, pp. 32-45, and *op. cit.*, 1966, Chapter 8.

³⁹Allan G.B. Fisher, *The Clash of Progress and Security* (London: Macmillan Co., 1935), and Clark, *op. cit.*

⁴⁰This is also illustrated by Kuznets, *op. cit.*, 1957-58.

The subscripts O and t refer, respectively, to the initial and the terminal dates of the period being considered. The first term on the right hand side of the equation measures the contribution of labour supply, and the second term measures the share of product per worker in the expansion of output (output refers to participation income in constant prices). Average product per worker is used as a catchall term and includes all factors which are responsible for increasing output other than increases in labour supply. In this sense, the term includes far more than is often included in labour productivity analysis. A great deal of additional analysis would be required to explain this residual. Nonetheless, gross movements of average product per worker by country and by sector over the ten-year period are of interest.

In analyzing the movements of average product per worker in a sector, it is important to realize that higher average product per worker and rising total employment may not be compatible. For example, if capital is scarce, then for efficient growth of the economy it may be necessary to push employment of labour: in such a case, product per worker will fall. Or if capital is made available relatively cheaply, then labour will be replaced and product per worker will rise. Additional information (not available in our case) is thus required to qualify as efficient or inefficient a movement in average product per worker of a sector.

Applying the above mathematical formulation (2) to the data in Table IV-9, we observe in Table IV-11 that if average product per worker had been held constant over the 1951-61 period, the increased labour supply would have raised agricultural output by 21 percent in Pakistan and 33 percent in Bangladesh. But average product per worker in the agricultural sector declined in both countries (though much more substantially in Bangladesh) thus restricting the output increase to only 14 percent in Pakistan and 15 percent in Bangladesh.

Both the industry and service sectors in Bangladesh, and all their subsectors, experienced significantly larger proportionate increases in product per worker than did those in Pakistan. These large increases in product per worker may have occurred as a result of improvements in methods of production or technological change, but more importantly as a result of a relatively stagnant employment situation. As ascertained in Table IV-9, the increases in employment in both these sectors lagged behind the increase in total labour force. In Pakistan, however, except for the subsectors transportation, *etc.*, and government, personal, and other services, the rate of growth of output was greater than that of employment, even though the latter was quite substantial. In fact, the growth of output in every non agricultural industry in Pakistan was higher than that in Bangladesh.

At least on the face of the statistics, average products per worker in two important subsectors in Pakistan, namely, transportation, *etc.* and government, personal, and other services, seem to have slipped backward. This may be due to the fact that the product per worker in these subsectors, and particularly in transportation, *etc.* were already very high in 1951. With the enlarging of employment in these subsectors, the traditional components (about one-half of the labour force in transportation, *etc.* in 1961 is so classified) also expanded substantially. However, as is seen in Table IV-9, the products per worker in these subsectors in 1961 still compare quite favourably with those of the other subsectors.

Table IV-11

Indexes of Growth in Output and Components by Industry, 1951—61
(Index Number: 1951=100)

Industrial group	Output	Labour supply	Product per worker
<i>Pakistan</i>			
Agriculture	114	120	94
Industry	205	185	111
Mining	219	200	109
Manufacturing	208	183	113
Construction and electricity, gas, etc.	329	171	193
Transportation, storage and communication	159	207	77
Service	142	143	100
Commerce	144	126	106
Government, personal, and other services	141	147	96
<i>Bangladesh</i>			
Agriculture	115	133	86
Industry	180	121	149
Mining and Manufacturing	202	147	137
Construction and electricity, gas, etc.	201	66	304
Transportation, storage and communications	148	95	155
Service	125	119	105
Commerce	122	114	106
Government, personal and other services	130	123	105

Overall, the economy of Pakistan grew in real terms at an annual exponential rate of 3.10 percent and that of Bangladesh at 2.11 percent. These growth rates of total output have three components, namely, (a) *labour supply*, measured in the same way as above, (b) *standardized product per worker*, standardized for the industrial structure, and (c) *changes in the industrial structure of employment*, keeping product per worker constant. Given the very different average and marginal labour productivities in different industries, measurement of the impact of structural changes on the rate of economic growth is crucial. The components of standardized product per worker and structural change are estimated by a decomposition of the product per worker index for the whole economy (weighted by relative labour shares of each industry using Paasche and Laspeyres index formulas). The mathematics are explained in Appendix to this chapter.

Table IV-12 presents a concise evaluation of the economic performance of the two countries over the decade. It can readily be ascertained that in Bangladesh, improvements in both product per worker and industrial structure were absent.

Instead, had the labour supply remained constant, the total output during 1951—61 would have contracted at a negative annual growth rate of 0.56 percent—the combined effect of declining product per worker and inefficient structural changes. This was largely the result of a decline in the product per worker in agriculture combined with a relative shift of labour into this sector.

Table IV-12

Relative Magnitude of the Components of total Output Growth, 1951—61

	Output growth (Total)	Labour force	Standardized product per worker	Change in industrial structure
<i>Annual exponential growth rate</i>				
Pakistan	3.10	2.88	—0.13	—0.36
Bangladesh	2.13	2.69	—0.26	—0.30
<i>Percentage</i>				
Pakistan	100.0	92.8	— 4.9	12.1
Bangladesh	100.0	128.6	— 7.9	—20.7

In Pakistan also, increase in labour supply remained the primary factor, accounting for 93 percent of the increase in real income. However, the component of “change in industrial structure” compensated for the decline in “standardized product per worker” and was a positive contributor to output growth.

Concluding Remarks

As in 1951, in 1961 the economies of Pakistan and Bangladesh shared a very common feature of the developing world—predominance of the agriculture sector. East Pakistan particularly remained dependent on agriculture, with 86 percent of its labour force engaged in this sector as of 1961, compared with the much smaller though still substantial 60 percent in West Pakistan. The average product of an agricultural worker in both countries throughout the 1950s and early 1960s, if it did not decline, made no improvement.⁴¹ However, in the second half of the 1960s, agriculture in Pakistan was making a breakthrough; progress in agriculture in Bangladesh was relatively modest during this period.

With the successful Second Five-Year Plan (1960—65) and continuing economic progress during parts of the Third Five-Year Plan (1965—70),⁴² the industrial compo-

⁴¹The annual growth rate of 1.6 percent in agricultural production in former Pakistan during this period was one of the lowest among the ECAFE countries (*Economic Survey of Asia and the Far East*, 1964 (New York: United Nations, Economic Commission for Asia and the Far East, 1965), Table 1-7).

⁴²Between 1960-61 and 1967-68, GPY increased by 37 percent in Bangladesh and 60 percent in Pakistan (Tables IV-9 and Appendix Table 2).

tion of GPY has been substantially changed in both countries. If the labour force survey of 1967-68 is taken as less inaccurate than the preceding ones,⁴³ there also seems to have been some significant changes in the structure of labour force over the period 1961 to 1967-68 (Table IV-9 and Appendix Table 2). Percentage agriculture labour force decline by six points in Bangladesh and five points in Pakistan concomitant with decreases of, respectively, eight and five points in the share of agriculture in GPY. As expected, the industry sector was the most dynamic—particularly so in Pakistan. This sector in Pakistan accounted for almost all of the decline in the share of agriculture in GPY (also in Bangladesh) as well as in total employment (about one-half in Bangladesh). From this survey, however, only the direction of changes can be deduced.

⁴³Judging by the 1951 and 1961 industrial distributions and the trends and magnitude of shifts in the structure of GPY between 1960-61 and 1967-68, the 1967-68 survey classification of labour force into the three major sectors (though not the detailed classification) appears to be relatively more consistent and meaningful than the earlier survey classifications.

APPENDIX TO CHAPTER 4

METHODS OF COMPUTING THE COMPONENTS OF OUTPUT GROWTH

Using the notations of Section 5, the formula for the decomposition of the index of output growth of an economy into indexes of labour supply and average product per worker is:

$$Q_t/Q_0 = (L_t/L_0)(P_t/P_0). \quad (1)$$

The first term on the right-hand side determines the labour supply component of output growth. The other components, "standardized product per worker" and "changes in the industrial structure of employment", can be computed from the second term as described below:

If $l_i = L_i/L$, where L = total employed labour force (therefore, l_i = relative share of industry i in total employment), one can write the economy-wide product per worker at time t (P_t) as the sum of the products per worker by industry weighted by the relative shares of industries in total employment:

$$P_t = \sum_i (P_{t, i} l_{t, i}), \quad i = 1, \dots, N \text{ industries}, \quad (2)$$

and an index of product per worker at time t , as compared with base period 0, as:

$$P_t/P_0 = \sum_i (P_{t, i} l_{t, i}) / \sum_i (P_{0, i} l_{0, i}). \quad (3)$$

This index can conveniently be decomposed into the following two indexes:

$$P_t/P_0 = \left[\sum_i (P_{t, i} l_{0, i}) / \sum_i (P_{0, i} l_{0, i}) \right] \left[\sum_i (P_{t, i} l_{t, i}) / \sum_i (P_{t, i} l_{0, i}) \right]. \quad (4)$$

The first index on the right-hand side is a base-weighted (Laspeyres formula) product per worker index and the second is a current-weighted (Paasche formula) industrial structure index. Index (3) can equally be decomposed in the reverse way:

$$P_t/P_0 = \left[\sum_i (P_{t, i} l_{t, i}) / \sum_i (P_{0, i} l_{t, i}) \right] \left[\sum_i (P_{0, i} l_{0, i}) / \sum_i (P_{0, i} l_{t, i}) \right]. \quad (5)$$

The first index on the right-hand side is now a current-weighted product per worker index and the second is a base-weighted industrial structure index. Note that product of a current-weighted product per worker index and a base-weighted industrial structure index or of a base-weighted product per worker index and a current weighted industrial structure index give the same change in the value of the economy-wide product per worker index. But the magnitude of a component derived from a Laspeyres index may be different from that from a Paasche index. For unique

measurement of the two components, the geometric mean of the Paasche and Laspeyres product per worker indexes (AB) and the geometric mean of the Paasche and Laspeyres industrial structure indexes (CD) are used:

$$P_t/P_o = \sqrt{AB} \sqrt{CD}, \quad (6)$$

where: $A = \frac{\sum_i (P_t, i l_{o, i})}{\sum_i (P_o, i l_{o, i})}$

$$B = \frac{\sum_i (P_t, i l_{t, i})}{\sum_i (P_o, i l_{t, i})}$$

$$C = \frac{\sum_i (P_t, i l_{o, i})}{\sum_i (P_t, i l_{t, i})}$$

$$D = \frac{\sum_i (P_o, i l_{t, i})}{\sum_i (P_o, i l_{o, i})}$$

Equation (6) is commonly known as the "ideal" index number proposed by Fisher.*

*Irving Fisher, *The Making of Index Numbers* (Boston: Houghton Mifflin Co., 1927). For a general discussion on index numbers, see Richard Stone, *Quantity and Price Indexes in National Accounts* (Paris: Organization for European Economic Cooperation, 1956), pp. 37-39.

Appendix Table 1
Adjusted Industrial Distribution of Labour Force, 1951—1961
 (in thousands)*

Industrial group	Pakistan		Bangladesh	
	1951	1961	1951	1961
Total labour force	9,506	12,556	12,886	16,871
Agriculture	6,212	7,483	10,845	14,462
Mining and quarrying	11	22	2	1
Manufacturing	925	1,695	499	735
Construction		260		84
Electricity, gas, etc.	167		144	
Transportation, storage and communications	162	25 335	196	11 187
Commerce	653	890	052	574
Services	1,070	1,69	569	700
Activities not adequately described		92	38	59
Unemployed	307	186	91	58

Sources: H.H. Nomani, *Census of Pakistan, 1951, East Bengal Tables* (Dacca: Bengal Printing Works, n.d.), Vol. 8, Table 6; Pakistan, Office of the Census Commissioner, *Census of Pakistan, 1951, West Pakistan Tables of Economic Characteristics* (Karachi: Manager of Publications, n.d.) Vol. 7, Table 6; id., *Population Census of Pakistan, 1961, Non-agricultural Labour Force, Pakistan* (Karachi: Manager of Publications, n.d.), Vol. 4, Table 7.

*The methodology adopted in adjustment of the data is discussed in section 1 of this chapter.

Appendix Table 2

Percentage Industrial Distribution of Labour Force 1965,+ 1966-67,@ 1967-68,@ and Gross Domestic Participation Income (GPY), ÷1967-68

Industrial group	Pakistan				Bangladesh			
	Labour Force			GPY	Labour Force			GPY
	1965	1966-67	1967-68	1967-68	1965	1966-67	1967-68	1967-68
Agriculture	58.6	53.4	54.9	42.6	75.1	77.8	79.6	56.2
Industry	22.2	25.8	24.9	28.4	10.7	9.6	9.3	20.9
Mining and quarrying	0.1	0.2	0.1	0.6	..	..	..	..
Manufacturing	14.5	16.3	15.7	15.1	6.2	5.9	5.4	8.6
Construction	2.9	3.8	3.5	4.9	1.7	0.9	1.1	4.8
Electricity, gas, etc.	0.1	0.4	0.3	0.8	..	0.1	0.2	0.7
Transportation, storage and communications	4.6	5.1	5.3	7.0	2.8	2.7	2.6	6.7
Service	18.4	20.7	19.9	29.0	14.0	12.5	11.1	22.9
Commerce	9.0	11.3	11.0	14.9	7.4	7.0	6.1	13.0
Government, personal, and other services	9.4	9.4	8.9	14.0	6.6	5.5	5.0	9.9
Activities not adequately described	0.8	0.2	0.3	..	0.2	0.1	..	..
Total (%)	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0+
Total //	..	..	..	26,016	..	..	..	20,329

Sources: Central Statistical Office, *Summary Reports of Population and Labour Force in Pakistan, 1966-67 and 1967-68* (Karachi: Central Statistical Office, 1969), Table 15, 16 and 17; Economic Adviser to the Government of Pakistan, *Pakistan Economic Survey 1968-69* (Islamabad: Ministry of Finance, Government of Pakistan, 1969), Table 1; Government of East Pakistan, *East Pakistan Bureau of Statistics, Statistical Digest of East Pakistan, 1968, No. 5* (Dacca: East Pakistan Government Press, 1969), Table 13.1.

Labour force figures exclude unemployed.

+ Time reference is January to September.

@ Time reference is fiscal-year period, i.e., July through June.

÷ Provisional estimates.

// GPY is in millions of rupees.

OCCUPATIONAL COMPOSITION OF THE LABOUR FORCE AND ITS RELATIONSHIP WITH THE INDUSTRIAL STRUCTURE

“Occupation” is the kind of work a person performs irrespective of the type of “industry” in which he is engaged. Occupation is thus distinguished by the *process* of production and not by the *product*. Generally, an analysis of the occupational composition of the labour force in conjunction with that of the industrial composition aids in assessing the economic development of a country.

Census Classification of Occupation and Adjustment of the Data

The 1961 census occupational classification was mainly patterned on the Malayan and Canadian classification systems and, in general, followed the ILO, “International Standard Classification of Occupation” at the three digit level. It provided for 9 main groups divided into 76 sub-groups and 349 minor groups. The 1951 census used a four digit classification code.

We reclassified both the 1951 and 1961 reported occupations in the broad perspective of the occupational classification system developed by the Population Studies Center at the University of Pennsylvania (from here on referred to as PSC). In our case modification of the scheme was largely a function of the availability of component occupation categories within major occupation groups.

The PSC occupational classification scheme has the advantage of emphasizing component or sub-groups within major occupational categories. It is important to analyze the component groups as, in the process of social and economic development, they may experience markedly different changes. There may be a mix of increases and decreases which leave the relative shares of the major occupational groups largely unchanged, thus masking important change in their composition. Also, such a scheme may aid in highlighting the direction of influences of social customs and conventions on the “choice of occupation”.

Besides the different classification systems, two additional problems were involved in compiling comparable 1951-1961 occupational series: (1) In 1951 the occupations of unemployed persons were included in the occupation groups to which they belonged. In 1961, “unemployed persons” were treated as a separate category (as in Table V-1). For the comparative analysis of 1951-1961, we adjusted the 1961

data by distributing the reported occupations of the unemployed to their respective occupation groups. The unemployed with "occupation not stated" were included in the unclassified category as in 1951. (2) There was a difference of two years in the minimum age limit for reporting of economic activities. The same procedure was adopted as was used to adjust the industrial distribution. However, it was not possible to adjust the 1961 cross-classification of occupation by industry as the relevant information by age was not available. We assumed the proportionate distributions of occupation by industry and industry by occupation to be the same for the labour force in age group 10-11 years as for the total labour force 10 years and over. These adjustments of the 1961 data were made only for the analysis in Section 3.

Occupation Structure and its Interrelations with Industry and Status, 1961

In a predominantly agrarian economy where both agriculture and non-agricultural sectors are mainly characterized by simple methods of production, one may expect a closer relationship between the industrial and occupational structure than is found in a more advanced economy. And, tautologically, the status composition of an occupation will be similar to the status composition of the related industry. Phelps-Brown correctly argues that the deployment of the labour force by occupation is interlocked with the deployment by industry and

indeed in the simplest 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.¹

Given the size of the agricultural sectors in Pakistan and Bangladesh, we hypothesize a high degree of homogeneity between the occupational and industrial distributions of their labour forces—more so in the latter and more so for females with their generally larger occupation in agriculture and the great influence of social and cultural norms on the types of activity that they can undertake. These hypotheses will be tested in the subsequent sub-sections.

Occupation Structure

The closeness between industry and occupation is partly borne out in Table V-1, which provides the occupational distributions of labour force in the two countries by sex. Comparing the occupational distribution in Table V-1 with the industrial distribution in Table IV-1, we find that the agricultural sector consists almost entirely of the occupation "farmers, fishermen, hunters, loggers and related workers" and vice versa. Actually, even in the more developed economies, the organization of agriculture is not yet complex enough to involve in substantial numbers the skills of manpower categories other than those of farmers, etc. This is also partly a failure of census classifications to recognize significant differences among occupations

¹E.H. Phelps-Brown, *The Economics of Labour* (New Haven and London: Yale University Press, 1962), pp. 86-87. For a useful discussion of changes in deployment of labour force by industry, occupation and region and their interrelations with economic advancement, see *ibid.*, pp. 82-93.

Table V-1

Occupation Distribution of the Labour Force by Sex, 1961

Occupation	Pakistan			Bangladesh		
	Percent of all occupations	Percent of non-agricultural occupations	Percent of major occupation group	Percent of all occupations	Percent of non-agricultural occupations	Percent of major occupation group
1	2	3	4	5	6	7
				<i>Males</i>		
Total labour force	100.0	—	—	100.0	—	—
Non-agricultural labour force	41.0	100.0	—	15.0	100.0	—
I Professional, technical & related workers	1.7	4.1	100.0	1.2	8.2	100.0
I-1 Architects, engineers & Surveyors	0.1	0.2	5.8	0	0.2	2.3
I-2 Medical workers	0.3	0.8	18.8	0.2	1.6	19.9
I-3 Teachers	0.6	1.6	38.5	0.7	4.4	53.7
I-4 All other	0.6	1.5	36.9	0.3	2.0	24.2
II Administrators, executives, managers and related workers	0.8	2.0	—	0.2	1.5	—
III Clerical workers	3.2	7.8	—	1.1	7.6	—
IV Sales workers	6.6	16.0	100.0	3.4	22.9	100.0
IV-1 Proprietors, managers and related workers	0.1	0.2	1.6	0.1	0.7	3.1
IV-2 Stall holders	4.4	10.7	67.0	0.9	5.7	25.0
IV-3 Hawkers and street vendor	0.8	2.0	12.8	0.2	1.1	4.9
IV-4 Selling occupation (NEC)	0.2	0.4	2.8	1.6	10.5	45.9
IV-5 All other	1.0	2.5	15.8	0.7	4.8	21.1

—Continued

Table V-1—Continued

	1	2	3	4	5	6	7
V	Farmers, fishermen, hunters, loggers and related workers	59.0	—	—	85.0	—	—
VI	Transport and communication workers	2.5	6.1	100.0	1.0	6.6	100.0
VI-1	Modern	1.4	3.3	53.7	0.4	3.0	46.0
VI-2	Traditional	1.2	2.8	46.3	0.5	3.5	54.0
VII	Craftsmen, production process and related workers and general labourer	18.7	45.6	100.0	5.6	37.2	100.0
VII-1	Spinners, weavers, tailors, shoe makers and related workers	6.2	15.0	32.9	1.8	11.9	32.0
VII-2	Metal workers	2.5	6.0	13.2	0.7	4.4	11.9
VII-3	Wood product workers	1.0	2.4	5.2	0.5	3.2	8.5
VII-4	Potters and chinaware makers	0.7	1.8	3.9	0.2	1.3	3.5
VII-5	Miners	0.2	0.4	0.8	0.0	0.0	0.1
VII-6	Construction workers	1.6	3.8	8.3	0.4	2.4	6.4
VII-7	General labourers	4.6	11.1	24.4	1.3	8.5	22.9
VII-8	All other craftsmen and production process workers	2.1	5.2	11.3	0.8	5.5	14.8
VIII	Service, sport and recreation workers	5.4	13.1	100.0	1.6	10.7	100.0
VIII-1	Protective service workers	1.2	3.0	22.9	0.4	2.8	26.5
VIII-2	Domestic service workers	2.1	5.2	39.4	0.8	5.4	50.7
VIII-3	All other	2.0	5.0	37.7	0.4	2.4	22.8
IX	Workers not classifiable	0.6	1.4	—	0.4	2.7	—
X	Unemployed	1.6	3.9	—	0.4	2.7	—

—Continued

Table V-1—Continued

Occupation	Pakistan				Bangladesh				
	Percent of all occupations	Percent of non-agricultural occupations	Percent of major occupation group	Percent-age of females in the total	Percent of all occupations	Percent of non-agricultural occupations	Percent of major occupation group	Percent-age of females in the total	
1	2	3	4	5	6	7	8	9	
				<i>Females</i>					
Total labour force	100.0	—	—	8.8	100.0	—	—	15.1	
Non-agricultural labour force	29.2	100.0	—	6.4	8.2	100.0	—	8.9	
I Professional etc.	2.8	9.6	100.0	14.0	0.3	3.8	100.0	4.3	
I-1 Architects, etc.	—	0.0	0.1	0.2	—	0.0	0.1	0.3	
I-2 Medical workers	1.0	3.5	36.5	24.0	0.2	1.9	50.0	10.2	
I-3 Teachers	1.7	6.0	61.6	20.7	0.1	1.6	43.1	3.5	
I-4 All other	0.0	0.2	1.8	0.8	0.0	0.3	6.8	1.3	
II Administrators, etc.	0.0	0.2	—	0.5	0.0	0.1	—	0.6	
III Clerical workers	0.4	1.2	—	1.1	0.0	0.3	—	0.4	
IV Sales workers	0.9	3.1	100.0	1.3	0.7	8.6	100.0	3.5	
IV-1 Proprietors etc.	0.0	0.0	0.6	0.5	—	0.0	0.4	0.4	
IV-2 Stall holders	0.5	1.6	49.8	1.0	0.1	0.8	9.8	1.4	
IV-3 Hawkers, etc.	0.2	0.7	21.8	2.2	0.1	1.2	13.4	9.1	
IV-4 Selling occupations (NEC)	0.1	0.5	15.1	6.7	0.5	5.7	66.1	5.0	
IV-5 All other	0.1	0.4	12.7	1.1	0.1	0.9	10.4	1.8	
V Farmers, fishermen, etc.	70.8	—	—	10.4	91.8	—	—	16.2	

—Continued

Table V-1—Continued

	1	2	3	4	5	6	7	8	9
VI	Transport, etc.	0.1	0.3	100.0	0.4	0.0	0.1	100.0	0.1
VI-1	Modern	0.0	0.1	41.4	0.3	—	0.0	62.4	0.2
VI-2	Traditional	0.1	0.2	58.6	0.5	—	0.0	37.6	0.1
VII	Craftsmen, etc.	13.9	47.8	100.0	6.7	4.7	57.3	100.0	13.1
VII-1	Spinners, weavers, etc.	8.9	30.5	63.8	12.2	2.6	31.8	55.5	20.7
VII-2	Metal workers	0.1	0.4	0.8	0.5	0.0	0.2	0.3	0.4
VII-3	Wood product workers	0.4	1.3	2.7	3.5	0.5	6.2	10.8	16.0
VII-4	Potters and chinaware makers	0.4	1.5	3.2	5.6	0.5	6.0	10.5	31.2
VII-5	Miners	0.0	0.0	0.0	0.4	0.0	0.1	0.1	14.4
VII-6	Construction workers	0.1	0.4	0.9	0.8	—	0.0	0.1	0.2
VII-7	General labourers	1.6	5.6	11.6	3.3	0.1	1.7	3.0	1.9
VII-8	All other	2.4	8.0	16.9	9.7	0.9	11.3	19.7	16.7
VIII	Service, sport and recreation workers	8.1	27.9	100.0	12.7	2.3	28.3	100.0	20.6
VIII-1	Protective service	0.0	0.1	0.4	0.3	0.0	0.1	0.2	0.2
VIII-2	Domestic service	6.0	20.6	73.8	21.4	2.2	26.1	92.3	32.0
VIII-3	All other	2.1	7.2	25.8	9.0	0.2	2.1	7.5	7.8
IX	Workers not classifiable	2.4	8.1	—	27.9	0.1	1.1	—	3.8
X	Unemployed	0.5	1.7	—	2.9	0.0	0.4	—	1.4

Sources: Population Census of Pakistan, 1961, Vol. 4, Table 6.

NEC = Not elsewhere classified

within the category of farmers, *etc.* In the non-agricultural labour force, three occupation groups, *viz.*, "craftsmen, production process and related workers and general labourers," "sales workers," and "service, sport and recreation workers," account for the bulk of the workers as do the corresponding industrial groups of manufacturing, commerce and services.

Looking into the occupation structure of non-agricultural labour force (taking it as 100 percent), we find that craftsmen, *etc.*, is the largest occupation group for males in both Pakistan and Bangladesh, engaging respectively 46 and 37 percent of their total number. Given the weight of the sub-category "textiles" in manufacturing, it is not surprising to find about one-third of this major occupation group being comprised of "spinners, weavers, tailors, shoe makers and related workers." The next largest component group is that of unskilled or "general labourers," followed by "metal workers" and the residual category of "all other craftsmen and production process workers." As expected from the discussion of industrial distribution in the preceding chapter, Pakistan has much larger percentages of metal workers and construction workers. These two groups, particularly metal workers, are generally characterized by their engagement in more modern industries.

Sales workers constitute the second largest major group of non-agricultural occupations; containing respectively 16 and 23 percent of male non-agricultural labour force in Pakistan and Bangladesh. Except for the sub-group of "all other sales workers," which consists largely of specialized occupations such as insurance salesmen, stock brokers and real estate brokers, most of the sales workers seem to be engaged in less organized and more traditional sales activities. More than three-fourths of the major occupation group consists of "stall holders," "hawkers and street vendors," and "selling occupations NEC." These three groups show identical status composition and are comprised almost entirely of self-employed or own-account workers (see Table V-3). The large numbers in these groups may be the result of a phenomenon observed in some other countries with low standards of living—non-availability of jobs elsewhere may result in an increase in small, one-man or family-owned and operated retail selling enterprises because these may offer a relatively easy outlet for people with very small capital and working with family help.² This same phenomenon may account for the increasing importance of "domestic service workers," whose existence in large numbers may be perpetuated by the great inequality in income distribution. In the context of Mexico, Jaffe remarks

much of the increase in the so-called service and white-collar industries, simply reflects the fact that the population of working force age has increased more rapidly than have the job opportunities in industries producing physical goods. This is implicit in the fact that so many of these services and white-collar industries pay lower than average wages.³

However, we lack the data needed to test the above intuitive reasonings.

The quality of non-agricultural labour force seems to be lower in Bangladesh than that in Pakistan as assessed by the criterion of occupation, with its larger

²A similar kind of reasoning is expounded by Phelps-Brown, *ibid.*, pp. 82-84.

³A.J. Jaffe, *People, Jobs and Economic Development; A Case History of Puerto Rico of Supplemented by Recent Mexican Experiences* (Illinois: Glencoe, 1959), p. 265.

percentages of sales workers and domestic service workers (the latter constituted half of the total services, *etc.* workers) and lower proportions in white-collar occupations of "administrators, executives, managers, and related workers" and "clerical workers". And, although the proportion of the other white-collar group, "professional, technical, and related workers" is relatively higher in Bangladesh, the percentage in the sub-category "architects, engineers, and surveyors," generally regarded as an important factor in economic development, though low in both countries, is lower there.

With regard to the sex differentials in occupational distribution, Table V-1 reveals, as expected, more marked occupational concentration for female non-agricultural workers than for males. To some extent, such concentration reflects the limitations imposed by the society on the "choice of work" available to women. The two sub-categories of spinners, weavers, *etc.*, and "domestic service" workers involve 51 and 58 percent of the female non-agricultural labour force in Pakistan and Bangladesh, respectively (corresponding percentages for males were only 20 and 17 percent). If we include with these two categories the sub-groups of all other craftsmen, *etc.*, "wood product workers," and "potters and chinaware workers," the combined proportion in Bangladesh is increased to four-fifths of the total non-agricultural women workers; while all other craftsmen, *etc.*, "medical workers" and "teachers," increase the combined proportion in Pakistan to seven-tenths.

The employment of women as medical workers and teachers in Pakistan accounts for almost one-tenth of the total female non-agricultural labour force and is responsible for a relatively larger professional group for females than for males. This may be due to medical treatment of women being largely restricted to women-medical practitioners (including nurses and midwives) and to sex-segregated educational facilities. This finding has an important policy implication—increased high-level education for women may lead to more female economic activity at least in urban areas.

Summary Appraisal of Occupation Structure

Considering the shares in total labour force of white-collar (professional, technical and related, administrators, *etc.*, clerical and sales workers), blue-collar (transport and communication workers and craftsmen, production process, *etc.* workers) and service workers, one reaches the conclusion that even Pakistan, while relatively more developed, has a long way to go in social and economic betterment. The proportions of white-collar workers are particularly low—11.8 and 5.5 percent, respectively, in Pakistan and Bangladesh as compared to the percentages of 29 in Japan and 42 in the U.S. for the same period. In this context the proportion of all jobs that are white-collar jobs is not an adequate "index of technological development"⁴ since 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 Pakistan and Bangladesh is not at a par with that of countries like Japan or the U.S. In both countries more than half the white-collar workers were sales workers (correspondingly only 34 percent in Japan and 24 percent in the U.S.). As mentioned before, most of these sales workers are involved in petty, marginal-type trading, whereas most of the

⁴A.J. Jaffe and C.O. Stewart, *Manpower Resources and Utilization: Principles of Working Force Analysis* (New York: John Wiley and Sons, 1951) p. 146.

sales activity in countries like Japan and the U.S. is of an organized form and consists of highly specialized sales occupations.⁵

The relative quality of white-collar workers in a country may also be assessed by looking into the levels of educational attainment. In the following are given the percentages of workers in different white-collar occupations with education of high school and above or of ten years and more schooling for the two countries and Japan and the U.S.

	Pakistan	Bangladesh	Japan ⁶	U.S. ⁶
Professional, technical and related workers	39.1	42.3	87.0	97.1
Administrators, etc.	27.6	31.6	69.4	83.0
Clerical workers	48.6	46.4	78.7	89.3
Sales workers	8.2	2.8	41.1	82.1

In this context the educational attainment of workers in general was very low (only 7.9 percent in Pakistan having education of matriculation level and over); and we may assert that the quality of white-collar workers as a group, other than sales workers, may be much above that of any other occupation group.

The differential in the proportion of blue-collar workers between the countries and Japan and the U.S. though not as pronounced as for white-collar workers, is still substantial. Compared to 21 percent in Pakistan and 6.4 percent in Bangladesh, the blue-collar workers in Japan and the U.S. accounted for, respectively, 32 and 34 percent of the total labour force. The differential in the proportion of service workers is less than in either of the other two categories. The percentage is 6 in Pakistan and 2 in Bangladesh, as compared to 6 in Japan and 11 in the U.S.⁷

Occupation and Industry

An analysis of the relationship between industry and occupation is very important as an aid for policy guidelines to the right kinds of vocational training and formal education. In the process of social and economic development there are disproportionate changes generated in the industrial structure (caused partly by the shifts in demand for the products of various industries) which, in turn, alter the relative importance of occupations. Also, with technological advancement, it is likely that the job pattern or occupation mix within an industry may itself change. Unless there are prompt shifts of emphasis in training and education to account for these changes, imbalances may occur between the supply and demand for different skills.

⁵Jaffe also discounts the quality of white-collar workers in Mexico, as pointed out above.

⁶Figures for Japan and the U.S. are for the census year 1960 and are taken from M. Sicron, *Interrelationships between the Educational Level and Occupational Structure of the Labour Force* (Unpublished Ph.D. dissertation, University of Pennsylvania, 1968), Tables 3.22 and 3.41. The education figures for Japan are of "10 years or more of schooling," for the U.S., "high school and above" and for Pakistan and Bangladesh, "matriculation or higher."

⁷The sources of information for the U.S. and Japan are U.S. Bureau of the Census, *Census of Population, 1960. Detailed Characteristics, United States Summary*. Final Report, PC(1)-ID (Washington, D.C.: U.S. Government Printing Office, 1963); U.N., *Demographic Yearbook, 1964*, (New York: 1965), Table 10; Unpublished materials in the files of the Population Studies Center, University of Pennsylvania.

An explicit relationship between occupation and industry structures of the labour force is discerned in Table V-2,⁸ which provides the industrial composition of each occupation. Our hypothesis, that the occupation and industry structures to a large extent have parallel relationships, seems to be largely substantiated.

Considering the male labour force first, we find that in both countries all the major occupations except administrators, *etc.*, clerical workers and general labourers are singularly concentrated in the related industries. After farmers, fishermen, *etc.*, sales workers form the most concentrated group—99 percent of the sales workers in Pakistan and 98 percent in Bangladesh are employed in the commerce industry. The next most concentrated group is professional, technical and related workers, which is mainly in community services (*i.e.*, education, health and welfare)—particularly so in Bangladesh (91 percent as compared to 81 percent in Pakistan). Among the skilled operatives, almost all the manufacturing workers (total of sub-categories VIII-1 to VIII-4 and VIII-8 in Table V-1) in both countries are engaged in manufacturing industries. But the degree of concentration is relatively less pronounced for construction workers and transportation and communication workers in Pakistan.

Administrators, *etc.*, and clerical workers are the most diffused occupations and are comparatively more so in Bangladesh than in Pakistan. In Bangladesh, for example, commerce, manufacturing, other services, *etc.*, and personal services each absorb more than 10 percent of administrators, *etc.*, while construction, transportation, *etc.*, and government services also engage significant proportions. On the other hand, in Pakistan about two-thirds of the workers in this occupation belong to manufacturing and commerce, the 48 percent in commerce alone is explained by a high proportion of commerce workers being identified as administrators, *etc.* 5.3 percent, compared to 1.7 percent in Bangladesh, (Table V-5). However, also in Karachi, the most industrialized and developed region of the nation, this occupation is mainly (90 percent) in manufacturing and trade.

On the whole it seems that both countries show very close relationships between occupation and industry, and that the economy in the more developed country, Pakistan, has not yet been modernized sufficiently to generate the degree of diffusion of occupations among industries observed in more developed countries. It is interesting to mention that Karachi had a pattern of occupation concentration in 1955 similar to those observed here.⁹

As hypothesized, the women workers in both countries show even more pronounced concentration of occupation by industry than do males. In only two occupations, namely administrators, *etc.* and clerical workers, do they show any dispersion.

⁸Some changes are made in occupation classification here—general labourers are taken out of craftsmen, *etc.*, and are treated as a separate occupation. Transport and communication workers are merged with craftsmen, *etc.*, and the new group is renamed "skilled operatives." These changes were necessary for correspondence with the 1951 occupational scheme used in providing cross-classification data for industry by occupation.

⁹See Ghazi M. Farooq, *The People of Karachi, Economic Characteristics*. Monographs in the Economics of Development No. 15 (Karachi: Pakistan Institute of Development Economics, 1966), pp. 69-72.

Table V-2

Industrial Composition of Each Occupation by Sex, 1961

Pakistan													
Occupation/ Industry*	All industries	(A)	(B)	(C)	(D)	(E)	(F)	(G)	(H-1)	(H-2)	(H-5)	Other services & un- classified	(Y)
		<i>Males</i>											
Total labour force	100.0	58.8	0.2	13.5	2.2	0.2	7.6	3.1	2.4	1.7	6.7	2.1	1.6
Professional, etc.	100.0	0.1	0.1	2.3	2.4	0.4	0.5	1.1	4.0	81.4	0.1	7.1	0.5
Administrators, etc.	100.0	0.4	0.3	17.4	9.3	0.1	47.8	4.3	7.0	0.5	5.4	7.3	0.2
Clerical workers	100.0	1.0	0.3	8.4	0.7	1.6	6.2	15.0	38.9	5.6	0.7	20.5	1.2
Sales workers	100.0	—	—	0.3	—	—	99.2	—	—	—	—	0.2	0.3
Farmers, etc.	100.0	99.6	—	—	—	—	0.3	—	—	—	—	—	—
Skilled operatives	100.0	0.1	1.0	75.3	5.2	0.7	0.4	13.3	0.5	0.1	1.8	1.0	0.6
Transportation, etc.	100.0	0.1	0.1	4.9	0.4	0.4	0.9	83.7	1.7	0.2	5.4	1.6	0.6
Manufacturing	100.0	0.2	0.1	95.9	0.3	0.2	0.2	0.5	0.2	—	1.3	0.6	0.6
Miners	100.0	0.03	99.2	0.2	—	—	—	—	—	—	—	—	0.6
Construction	100.0	—	0.2	31.7	52.4	5.5	1.6	2.8	0.8	—	0.3	3.5	1.1
General labourers	100.0	—	0.1	5.2	25.0	0.4	3.4	4.2	0.5	0.1	54.3	2.5	4.3
Services and others	100.0	0.4	0.1	1.8	0.2	0.2	0.4	1.7	12.5	1.7	51.4	12.9	16.9
<i>Females</i>													
Total labour force	100.0	71.0	—	12.2	0.4	—	1.0	0.2	0.6	3.1	8.4	2.6	0.5
Professional, etc.	100.0	—	—	0.2	—	—	—	0.4	0.4	97.9	0.1	0.6	0.3
Administrators, etc.	100.0	0.4	—	21.8	1.8	—	38.0	6.2	7.4	9.6	4.1	9.9	0.4
Clerical workers	100.0	0.2	—	5.9	0.3	—	5.5	8.3	11.0	47.0	0.8	20.0	0.2
Sales workers	100.0	—	—	1.0	—	—	98.6	—	—	—	—	0.3	0.1
Farmers, etc.	100.0	99.0	—	—	—	—	0.1	—	—	—	—	—	—
Skilled operatives	100.0	—	—	97.3	0.8	—	—	0.7	—	—	0.9	—	0.2
Transportation, etc.	100.0	0.9	—	4.3	0.2	—	0.5	89.3	1.6	0.2	1.8	0.5	0.8
Manufacturing	100.0	—	—	98.9	—	—	—	—	—	—	0.9	—	0.2
Construction	100.0	—	—	21.2	75.4	—	0.3	0.3	0.3	—	0.2	0.8	0.4
General labourers	100.0	0.1	—	4.5	16.2	—	1.0	2.2	—	—	73.3	0.8	1.9
Services and others	100.0	1.5	—	0.2	—	—	0.2	0.2	4.6	1.3	65.1	22.8	4.0

Continued

Bangladesh

Occupation/ Industry*	All industries	Bangladesh											
		(A)	(B)	(C)	(D)	(E)	(F)	(G)	(H-1)	(H-2)	(H-5)	Other services and un- classified	(Y)
<i>Males</i>													
Total labour force	100.0	85.0	—	4.2	0.6	0.1	3.8	1.4	1.0	1.2	1.9	0.6	0.4
Professional, etc.	100.0	—	0.1	1.0	0.1	0.2	1.2	0.5	2.4	90.5	0.1	3.6	0.3
Administrators, etc.	100.0	—	0.1	20.5	8.3	0.3	30.1	7.0	7.1	0.4	11.6	14.6	0.1
Clerical workers	100.0	0.1	—	6.6	0.5	0.9	14.3	17.2	43.0	3.9	0.7	10.2	2.7
Sales workers	100.0	—	—	0.3	—	—	98.3	0.1	—	—	0.3	0.8	0.1
Farmers, etc.	100.0	100.0	—	—	—	—	—	—	—	—	—	—	—
Skilled operatives	100.0	—	0.1	73.1	5.1	0.8	0.5	18.9	0.5	0.1	0.3	0.5	0.2
Transportation, etc.	100.0	—	0.1	1.3	—	0.1	0.2	96.2	1.0	0.1	0.5	0.2	0.2
Manufacturing, etc.	100.0	—	—	96.8	0.1	0.5	0.5	1.0	0.3	0.1	0.1	0.5	0.2
Miners	100.0	1.2	72.1	12.8	5.3	0.6	1.6	1.5	1.9	0.3	0.4	2.0	0.4
Construction	100.0	—	—	11.5	74.9	6.3	0.8	3.0	1.2	0.2	1.1	1.0	0.1
General labourers	100.0	0.1	0.1	8.6	21.0	0.5	5.7	4.2	1.2	0.2	57.1	1.1	0.3
Services and others	100.0	—	—	3.3	0.1	0.4	2.4	3.1	16.0	1.1	44.6	14.3	14.7
<i>Females</i>													
Total labour force	100.0	91.8	—	4.6	—	—	0.7	—	0.1	0.3	2.3	0.1	—
Professional, etc.	100.0	—	—	0.7	—	—	0.2	—	0.7	94.3	1.8	1.4	—
Administrators, etc.	100.0	—	—	26.7	—	—	25.2	—	8.7	3.9	8.3	9.7	—
Clerical workers	100.0	—	—	8.3	—	—	15.9	—	42.1	16.4	0.9	7.9	—
Sales workers	100.0	—	—	0.3	—	—	99.1	—	—	—	0.2	0.3	—
Farmers, etc.	100.0	100.0	—	—	—	—	—	—	—	—	—	—	—
Skilled operatives	100.0	—	—	—	—	—	0.1	—	—	—	0.3	—	—
Manufacturing	100.0	—	—	99.3	—	—	0.1	—	—	—	0.3	—	—
General labourers	100.0	0.2	—	9.2	—	—	2.3	—	1.0	0.1	74.5	1.1	—
Service and others	100.0	—	—	0.7	—	—	0.1	—	3.3	1.3	88.4	4.3	—

Sources: *Ibid.*, Table 7.

* (A) Agriculture; (B) Mining and quarrying; (C) Manufacturing; (D) Construction; (E) Electricity, gas, water and sanitary services; (F) Commerce; (G) Transportation, storage and communication; (H-1) Government services; (H-2) Community services; (H-5) Personal services; (Y) Unemployed.

Another way of obtaining insights into the interrelationships between occupation and industry is to look at the occupational composition or occupation mix of industries as in Table V-5. Here also, a large degree of concentration is found. An important observation, borne out by Table V-5 as well as Table V-2, is that non-agricultural physical-goods-producing industries (*viz.*, mining, manufacturing and construction) engage primarily manual or blue-collar workers (from more than 80 percent in mining to more than 90 percent in manufacturing) and vice versa. In contrast, by 1960 in the U.S. more than one-fifth of the total workers in these industries were white-collar workers due, as Barry mentions, to the combined result of still increasing mechanization and automation, expansion in research activities, improving methods of distribution and emphasis on employee services provided by individual establishments. (Most of these exist only on a very limited scale in industries in Pakistan and Bangladesh). It is expected that in the U.S. "most of the additional employees in non-farm goods producing industries will be white-collar workers."¹⁰

On the other hand, among the service-producing industries, four-fifths of the workers in transportation, *etc.*, two-thirds of those in electricity, *etc.*, and a significant proportion of those in personal services are blue-collar workers. Only commerce and community services consist primarily of white-collar workers; government services and other services include both white-collar and service workers.

The coefficient matrices in Table V-2 and Table V-5 can be used to indicate probable changes in the levels of demand for different manpower categories concomitant with diversified growth in industries. For example, in Bangladesh the proportion of professionals, *etc.* in the mining industry is 7.1 percent, the highest for any industry except the service sector, but, as mining employs less than 0.1 percent of the total workers in this occupation, even a very substantial expansion in mining will, have only a negligible impact on the demand for professional and technical workers. On the other hand, in Pakistan, while administrators, *etc.* account for only one percent of the labour engaged in manufacturing, even small changes in such industries will significantly alter the demand for these skills as a little less than one-fifth of this occupation group is absorbed in manufacturing. However, as administrators, *etc.* and clerical workers are the two relatively most diffused occupations among the non-agricultural industries, the demand for their services will increase with the expansion of almost any kind of non-agricultural activity.

Changes in industrial structure are not independent of the occupational structure. Among other factors, changes in the labour supply of certain occupations may influence the growth of related industries; upgrading of occupations will also have some bearing. For example, improvement in the quality of administrators, professional and technical workers involved in manufacturing may greatly improve productivity and, other things being constant, may result in the need of fewer manual workers. Or upgrading of the skills of foremen may shrink the ratio of foremen to manual workers.

¹⁰C.A. Barry, "White-Collar Employment: I. Trends and Structure," *Monthly Labour Review*, February 1961, pp. 16-17.

Table V-3
Status Composition of Selected Occupation Groups of the Non-agricultural Labour Force by Sex, 1961
 (percent distribution)

		Pakistan				
Occupation/Status	Total	Emple- yers	Emple- yees	Own- account workers	Unpaid family workers	
		<i>Males</i>				
I	Professional, technical & related workers	100.0	0.9	77.1	21.3	0.8
II	Administrators, etc.	100.0	24.2	20.0	52.4	3.4
III	Clerical workers	100.0	—	98.4	1.4	0.1
IV	Sales workers	100.0	1.8	8.0	83.8	6.4
IV-1	Proprietors, managers, retail trade	100.0	86.5	3.1	10.0	0.3
IV-2	Stall holders	100.0	0.3	—	99.1	0.6
IV-3	Hawkers & street vendors	100.0	—	2.5	94.8	2.7
IV-4	Selling occupations (NEC)	100.0	1.0	14.1	81.0	3.8
IV-5	All other	100.0	0.9	46.7	17.1	35.2
VI	Transportation & communication workers	100.0	0.1	42.0	53.8	4.1
VII	Craftsmen, production process, general labourers, etc.	100.0	0.2	30.6	63.1	6.1
VII-1	Spinners, etc.	100.0	0.2	26.9	66.0	6.9
VII-2	Metal workers	100.0	0.4	44.3	49.2	6.1
VII-3	Wood product workers	100.0	0.2	12.4	77.3	10.0
VII-5	Miners	100.0	0.1	76.4	22.5	1.0
VII-6	Construction workers	100.0	0.1	32.1	63.4	4.3
VII-7	General labourers	100.0	—	26.1	69.8	4.1
VII-8	All other	100.0	0.3	34.3	57.9	7.5
VIII	Service, sport & recreation workers	100.0	0.4	60.2	35.6	3.8
		<i>Females</i>				
I	Professional, technical & related workers	100.0	0.2	71.3	26.8	1.6
II	Administrators, etc.	100.0	27.0	31.7	34.1	7.2
III	Clerical workers	100.0	—	98.9	1.0	0.1
IV	Sales workers	100.0	0.6	3.7	81.2	14.4
VI	Transportation & communication workers	100.0	0.4	22.7	48.2	28.8
VII	Craftsmen, production process workers, etc.	100.0	—	5.5	72.0	22.5
VII-1	Spinners, etc.	100.0	—	4.3	73.7	22.0
VII-2	Metal workers	100.0	0.4	11.9	45.9	41.8
VII-3	Wood product workers	100.0	—	2.2	61.2	36.6
VII-6	Construction workers	100.0	0.1	7.5	60.5	31.8
VII-7	General labourers	100.0	—	12.6	73.6	13.8
VII-8	All other	100.0	—	5.2	69.0	25.8
VIII	Service, sport & recreation workers	100.0	—	59.4	34.9	5.7

—(Continued)

Bangladesh

Occupation/Status		Total	Empl- oyers	Empl- oyees	Own- account workers	Unpaid family workers
I	Professional, technical & related workers	100.0	0.5	<i>Males</i> 71.1	27.8	0.6
II	Administrators, etc.	100.0	31.3	30.1	37.3	1.3
III	Clerical workers	100.0	—	95.0	4.7	0.2
IV	Sales workers	100.0	3.0	15.5	74.9	6.6
IV-1	Proprietors, managers, retail trade	100.0	82.7	9.1	7.9	0.3
IV-2	Stall holders	100.0	0.8	—	97.1	2.0
IV-3	Hawkers & street vendors	100.0	0.1	3.1	93.3	3.4
IV-4	Selling occupations (NEC)	100.0	0.4	1.6	94.5	3.5
IV-5	All other	100.0	0.3	69.3	9.4	21.1
VI	Transportation & communication workers	100.0	0.2	49.2	48.7	2.0
VII	Craftsmen, production process, general labourers, etc.	100.0	0.7	36.9	55.6	6.8
VII-1	Spinners, etc.	100.0	1.1	39.8	47.5	11.6
VII-2	Metal workers	100.0	1.5	46.0	46.3	6.3
VII-3	Wood product workers	100.0	0.5	14.5	78.2	6.8
VII-5	Miners	100.0	0.5	69.2	27.3	3.0
VII-6	Construction workers	100.0	0.4	37.7	59.4	2.4
VII-7	General labourers	100.0	—	28.6	70.1	1.3
VII-8	All other craftsmen & production process workers	100.0	0.8	46.0	46.0	7.3
VIII	Service, sport & recreation workers	100.0	0.9	76.0	21.4	1.7
I	Professional, technical & related workers	100.0	0.1	<i>Females</i> 58.7	37.2	3.9
II	Administrators, etc.	100.0	37.1	24.9	34.6	3.4
III	Clerical workers	100.0	0.2	91.5	7.1	1.1
IV	Sales workers	100.0	0.4	2.3	82.7	14.6
VI	Transportation & communication workers	100.0	0.6	51.3	39.8	8.3
VII	Craftsmen, production process workers, etc.	100.0	0.1	5.8	55.3	38.9
VII-1	Spinners, etc.	100.0	0.1	5.0	48.4	46.5
VII-2	Metal workers	100.0	0.5	16.0	62.0	21.4
VII-3	Wood product workers	100.0	—	0.9	67.4	31.7
VII-6	Construction workers	100.0	—	18.6	61.9	19.5
VII-7	General labourers	100.0	—	18.6	72.2	9.2
VII-8	All other	100.0	0.2	7.5	61.8	30.4
VIII	Service, sport & recreation workers	100.0	—	82.5	15.7	1.8

Sources: *Ibid.*, Table 4

Status Composition of Non-Agricultural Occupations

Table V-3 illustrates the status composition of selected occupations. Since there exists a close relationship between occupation and industry, one would expect similar status distributions of the two. This seems more or less to be the case when we compare Table V-3 with Table IV-4, which shows the status composition of industries. It is true particularly of the occupations which were observed to be singularly concentrated in related industries. In Pakistan, for example, among the male sales workers, 8 percent are employers, 84 percent own-account and 6 percent unpaid family workers. The corresponding status distribution for the commerce industry is 11, 81, and 6 percent. In Bangladesh, 83 percent of the female sales workers are own-account and 15 percent unpaid family workers, corresponding with figures of 81 percent own-account and 15 percent unpaid family workers in commerce.

Most of the conclusions drawn in section 2 of Chapter 4 will also hold for the status composition of occupations.

Trends in Occupational Composition of the Labour Force and Components of Growth, 1951—1961

Because of data adjustment problems, the following results should be taken as indicative of general trends in the 1951—61 census decade rather than as precise measurements.

Growth and Changes in Occupational Structure

Table V-4 reveals the changes in occupational structure of the labour forces in the countries over the 1951—1961 period. An occupation is distinguished as “expanding” or “contracting” depending on whether its relative share in labour force increased or decreased during this period. To gain a quick insight into the structural changes that took place, we have ranked the expanding occupations in decreasing order of the percentage change in the size of the occupation¹¹ and the contracting ones in increasing order.

The summation of either positive or negative differences in percent shares of all occupations in the total labour force between the two census dates, technically known as an “index of redistribution or concentration,” shows a total change equivalent to only 2 percent (adding negative differences) in the occupational structure of the labour force in Bangladesh. This implies that as a result of the combined effects of differential absorption by occupations of new entrants into labour activity and shifts between occupations, 20 persons per 1,000 labour force participants in 1961 registered different occupations than warranted by the 1951 occupational structure—the corresponding figure for Pakistan is 56. With knowledge of the changes in the

¹¹Note that the category of “workers not classifiable” is not included in the discussion. As a percentage of the total labour force, this group was more substantial in both countries in 1961 than in 1951 (see Table V-4). In Tables V-4, V-6 and V-7, the absolute total structural change in expanding occupations will be less than that in contracting ones by the change in the relative size of “workers not classifiable.” If required, the relevant information for this category can thus be obtained by subtracting the absolute figures of total structural changes in expanding occupations from those of contracting ones.

Table V-4

Growth and Trends in Occupation Groups of the Labour Force, 1951-61

Pakistan

Occupation	Labour force (thousands)		Percent change	Percent of all occupations		Percent of non-agricultural occupations		Percent shift in total occupational structure
	1951	1961	1951-61	1951	1961	1951	1961	1951-61
All occupations	9,506	12,556	32.08	100.00	100.00	—	—	—
Non-agricultural occupations	3,298	5,060	53.40	34.70	40.30	100.00	100.00	+5.60
A. <i>Expanding occupations</i> (major)	3,298	4,832	46.51	34.69	38.48	—	—	+3.79
Transportation and communication workers	75	294	289.90	0.79	2.34	2.28	5.80	+1.55
Professional, technical and related workers	103	227	120.58	1.08	1.81	3.12	4.48	+0.73
Architects, engineers, etc.	2	11	418.46	0.02	0.09	0.07	0.23	+0.07
Medical workers	18	48	174.52	0.19	0.38	0.53	0.95	+0.19
Teachers	33	95	189.54	0.34	0.75	0.99	1.87	+0.41
All other	50	72	43.94	0.53	0.58	1.53	1.43	+0.05
Administrators, etc.	53	98	84.68	0.56	0.78	1.61	1.94	+0.22
Clerical workers	252	378	50.34	2.65	3.01	7.63	7.48	+0.36
Sales workers	525	772	46.97	5.53	6.15	15.93	15.26	+0.62
Service, sport and recreation workers	519	714	37.45	5.46	5.69	15.75	14.11	+0.23
Protective service workers	54	145	169.72	0.56	1.15	1.63	2.86	+0.59
Domestic service workers	227	310	36.81	2.38	2.47	6.87	6.13	+0.09
All other	239	259	8.38	2.52	2.06	7.25	5.12	-0.46
Craftsmen, production process workers, etc.	1,770	2,347	32.65	18.62	18.70	53.65	46.39	+0.08
Spinners, etc.	407	813	99.85	4.28	6.48	12.34	16.07	+2.20
Metal workers and related workers	147	289	96.43	1.54	2.30	4.45	5.70	+0.76
Wood product workers	110	117	6.63	1.16	0.93	3.34	2.32	-0.23
Miners	7	17	130.76	0.08	0.14	0.23	0.34	+0.06
Construction workers	34	183	436.86	0.36	1.46	1.04	3.62	+1.10
General labourers	922	566	-38.63	9.70	4.51	27.96	11.18	-5.19
All other	142	362	154.65	1.49	2.88	4.31	7.15	+1.39
B. <i>Contracting occupations</i> (major)	6,208	7,497	20.76	65.30	59.70	—	—	-5.60
Farmers, etc.	6,208	7,497	20.76	65.30	59.70	—	—	-5.60
C. <i>Workers not classifiable</i>	1	229	—	0.01	1.82	0.03	4.53	-1.81

Table V-4 (Continued)

Bangladesh

Occupation	Labour force (thousands)		Percent change	Percent of all occupations		Percent of non- agricultural occupations		Percent shift in total occupa- tional structure
	1951	1961	1951-61	1951	1961	1951	1961	1951-61
All occupations	12,886	16,871	30.92	100.00	100.00	—	—	—
Non-agricultural occupations	1,975	2,409	21.96	15.33	14.28	100.00	100.00	-1.05
A. <i>Expanding occupations</i> (Major)	11,048	14,685	32.93	85.73	87.04	—	—	+1.31
Administrators, executives, managers and related workers	15	33	126.38	0.11	0.20	0.75	1.39	+0.09
Professional, technical and related workers	122	190	56.42	0.94	1.13	6.15	7.89	+0.19
Architects, engineers and surveyors	1	4	248.27	0.01	0.02	0.06	0.17	+0.01
Medical workers	35	40	16.65	0.27	0.24	1.75	1.67	-0.03
Teachers	46	101	121.02	0.36	0.60	2.32	4.20	+0.24
All other	40	45	11.23	0.31	0.26	2.03	1.85	-0.05
Farmers, fishermen, hunters, loggers and related workers	10,911	14,462	32.54	84.67	85.72	—	—	+1.05
B. <i>Contracting occupations</i> (major)	1,836	2,075	18.84	14.26	12.29	—	—	-1.97
Clerical workers	193	174	-10.03	1.50	1.03	9.78	7.22	-0.47
Sales workers	502	524	4.30	3.90	3.11	25.43	21.75	-0.79
Craftsmen, production process workers, <i>etc.</i>	802	942	17.44	6.22	5.58	40.60	39.10	-0.64
Spinners, <i>etc.</i>	195	329	68.94	1.51	1.95	9.85	13.64	+0.44
Metal workers and related workers	71	98	37.66	0.55	0.58	3.61	4.08	+0.03
Wood product workers	94	83	-11.79	0.73	0.49	4.75	3.44	-0.24
Miners	1	1	-8.43	0.01	0.01	0.05	0.04	—
Construction workers	13	53	303.38	0.10	0.31	0.67	2.20	+0.21
General labourers	308	192	-37.66	2.39	1.14	15.58	7.96	-1.25
All other	120	186	54.77	0.93	1.11	6.10	7.74	+0.18
Transportation and communication workers	115	146	26.24	0.90	0.86	5.85	6.05	-0.04
Service, sport and recreation workers	224	289	29.12	1.74	1.71	11.33	12.00	-0.03
Protective service workers	37	63	70.65	0.29	0.38	1.88	2.63	+0.09
Domestic service workers	127	167	31.73	0.99	0.99	6.43	6.94	—
All other	60	58	-2.25	0.46	0.35	3.02	2.42	-0.11
C. <i>Workers not classifiable</i>	2	111		0.02	0.66	0.11	4.61	+0.64

Sources : *Census of Pakistan, 1951*, Vol. 7, Tables 1 and 3; Vol. 8, Tables 2 and 3; *Population Census of Pakistan, 1961*, Vol. 4, Tables 4, 6 and 10.

* 1961 labour force figures in this table and Tables V-5, V-6 and V-7 exclude persons in 10-11 year age group.

industrial structure of the labour force over the same period, it is not surprising to see that the change in occupational structure in Bangladesh was mainly in favour of farmers, *etc.* This occupation registered an increase of 32 percent as compared to 31 percent in the total labour force and 22 percent in the non-agricultural labour force. White-collar occupations of administrators, *etc.*, and professionals, *etc.* were the only non-agricultural occupations to expand in both absolute and relative terms, but they did not grow enough to prevent a decline in the proportion of total white-collar workers from 6.5 percent in 1951 to 5.5 percent in 1961. In fact, the other two white-collar occupations, clerical workers and sales workers, are listed at the top of the contracting occupations; clerical workers even declined in absolute size by 10 percent.

Among other losing major occupation groups in Bangladesh, the relative share of craftsmen, *etc.* declined by 0.6 percentage points although its sub-categories of spinners, weavers, *etc.*, metal workers, construction workers and all other craftsmen, *etc.* showed impressive relative gains. These sub-categories also make very substantial gains in Pakistan, though there too the major occupation group as a whole declined in relative importance within the non-agricultural labour force. The particularly remarkable increase in the number of spinners, *etc.* in both countries is a direct result of continuing growth of the textile industry, which transformed the economy of former Pakistan from a textile importer until the early 1950's to a leading textile exporter among the developing countries by the early 1960's.¹²

The increase in construction workers and metal workers, which was very marked in Pakistan, reflects the growing importance of the relatively more modern physical-goods-producing sector. In fact, if we exclude the sub-category of unskilled or general labourers and include transportation and communication workers, then this occupation, renamed as "skilled operatives," takes third rank among the expanding occupations in both countries (see Table V-6 and V-7). General labourers show very large negative growth—39 percent for the decade in Pakistan and 38 percent in Bangladesh. Such large decreases could only have been possible if (a) most of the workers in the 1951 group got technical experience on the job or elsewhere and shifted to more skilled jobs, and (b) blue-collar entrants into the labour force during 1951—1961 were mostly skilled workers. Conceiving the magnitudes involved, even if the above factors were operative, they could not explain a large part of the decline in the number of general labourers. This seems to be a product of classification problems. With the breakdown of the major occupation group, craftsmen, *etc.* (in Table V-4) into skilled operatives and general labourers (as in Table V-5 to V-8), the "index of redistribution or concentration" now shows a total change in the occupational structure equivalent to 10.8 percent in Pakistan and 2.5 percent in Bangladesh.

In Pakistan, farmers, *etc.* were the only major occupation group to register a decline in proportion to the total labour force (from 65.3 percent in 1951 to 59.7 in 1961).

Contrary to Bangladesh, the total white-collar occupations in Pakistan not

¹²In terms of the 1956 exchange rate (U.S. \$ 0.21 per rupee), in 1961 former Pakistan exported textiles worth Rs. 432 million (textile imports were Rs. 53 million), compared to imports of textiles worth Rs. 987 million in 1951 with no export of textiles. U.N., Statistical Office, *Yearbook of International Trade Statistics, 1954 and 1962* (New York, 1955 and 1964, respectively).

only gained but registered the maximum increase—the proportion increasing by two percentage points to 11.8 in 1961. However, within non-agricultural occupations, the proportion of clerical and sales workers declined (as it did in Bangladesh). As a single group, transport and communication workers in Pakistan showed the largest gain as a relative proportion of both total labour force and non-agricultural labour force. This reflects the rapidly expanding economic infrastructure in the country, which, as mentioned in the previous chapter, also involved an expansion of the transportation industry.

The logical extension of the above descriptive analysis is to search for a set of factors responsible for the growth and changes in the occupation structure that took place during 1951—1961. Changes in the absolute size of occupations can be related to the effect of increase in labour supply and/or the effect of structural changes in the economy.¹³

(A) *Growth effect*: The size of labour force keeps changing as a result of a continuous process of new entries and reentries and of withdrawals due to death or retirement. During the decade in consideration, the labour force registered increases of 32 and 31 percent in Pakistan and Bangladesh, respectively. If no structural changes had taken place, each occupation would have been enlarged by 32 percent in Pakistan and 31 percent in Bangladesh. However, as observed above, the occupations showed heterogeneous growth rates—implying the incidence of structural changes.

(B) Effect of structural changes on the occupational structure can be bifurcated into the *industry effect* and the *occupation mix effect*:

The *industry effect* is the result of disproportionate growth among different industries characterized by different job patterns, producing varying impacts on the growth of different occupations.

The *occupation mix effect* refers to changes of job patterns, *i.e.*, changes in occupational composition of the labour force within industries. Diffusion of general education and vocational training along with changes in production processes and technology may result in substantial occupational substitution within industries. Labour supply factors may also alter relative job patterns.

Table V-5 illustrates the job patterns in different industries in 1951 and 1961. Some changes can be observed. For example, in Pakistan, the share of white-collar workers in government service was 67.4 percent in 1951, but declined to 56.7 percent in 1961. Commerce in 1961 became more specific to sales workers. But the proportion of farmers, *etc.* in agriculture remained unchanged. Overall the changes have not been uniform. Relatively, the more expanding occupations did not increase their share in every industry and contracting occupations did not lose in every industry.

¹³See K.S. Gnanasekaran, *Interrelations between Industrial and Occupational Changes in Manpower: United States, 1950-1960*. Analytical and Technical Reports, No. 6 (Philadelphia: Population Studies Center, University of Pennsylvania, 1966), Section III.

Table V-5

Occupational Composition of Each Industry, 1951—1961
(percent distribution)

Occupation/Industry*	All industries	(A)	(B)	(C)	(D) + (E)	(F)	(G)	(H-1)	(H-2)	(H-5)	Other services & unclassified & unemployed
<i>Pakistan 1951</i>											
Total labour force (in '000')	9,506 100.0	6,212 100.0	11 100.0	925 100.0	167 100.0	653 100.0	162 100.0	271 100.0	97 100.0	514 100.0	495 100.0
Professional, etc.	1.1	—	0.6	0.7	1.2	0.3	0.6	1.2	89.0	0.1	0.3
Administrators, etc.	0.6	—	0.4	0.8	1.6	5.2	0.7	1.2	0.7	0.7	0.7
Clerical workers	2.7	—	1.4	2.5	1.0	3.6	8.3	64.9	3.2	0.7	1.4
Sales workers	5.5	—	0.4	0.4	0.2	79.4	0.1	0.1	0.4	0.1	0.2
Farmers, etc.	65.3	99.9	—	—	—	—	—	—	—	—	—
Skilled operatives	9.7	—	70.2	81.3	23.4	2.4	43.8	5.6	1.9	1.9	2.3
General labourers	9.7	0.1	24.9	12.8	71.2	6.4	40.6	3.6	2.5	25.3	86.6
Service workers	5.5	—	2.2	1.5	1.4	2.8	5.9	23.3	2.3	71.2	8.9
<i>Bangladesh 1951</i>											
Total labour force (in '000')	12,886 100.0	10,917 100.0	2 100.0	499 100.0	144 100.0	502 100.0	202 100.0	179 100.0	116 100.0	198 100.0	128 100.0
Professional, etc.	0.9	0.1	4.0	0.4	0.4	0.6	0.7	1.7	87.6	0.6	6.4
Administrators, etc.	0.1	—	1.3	0.2	1.9	1.2	0.3	1.1	2.9	1.0	0.3
Clerical workers	1.5	—	15.7	0.6	0.4	1.9	10.1	71.4	5.1	1.3	17.8
Sales workers	3.9	—	11.3	0.9	0.7	93.9	0.4	2.5	4.0	0.7	9.1
Farmers, etc.	84.7	100.0	—	—	—	—	—	—	—	—	0.7
Skilled operatives	4.7	—	44.3	90.0	9.5	1.4	61.1	1.2	1.1	1.2	6.6
General labourers	2.4	—	21.6	7.4	86.6	0.6	22.9	0.9	0.5	21.6	39.4
Service workers	1.7	—	1.0	0.5	0.6	0.4	4.5	21.3	1.3	73.6	18.4

* (A) Agriculture; (B) Mining and quarrying; (C) Manufacturing; (D) Construction; (E) Electricity, gas, water and sanitary services; (F) Commerce; (G) Transportation, storage and communication; (H-1) Government services; (H-2) Community services; (H-5) Personal services; (Y) Unemployed.

—(Continued)

Table V-5—Continued.

Occupation/ Industry*	All Industries	(A)	(B)	(C)	(D)	(E)	(F)	(G)	(H-1)	(H-2)	(H-5)	Other services unclas- sified	(Y)
<i>Pakistan 1961</i>													
Total labour force (in '000')	12,556 100.0	7,482 100.0	22 100.0	1,695 100.0	260 100.0	25 100.0	890 100.0	360 100.0	283 100.0	229 100.0	856 100.0	267 100.0	186 100.0
Professional, etc.	1.8	—	1.1	0.3	1.8	3.2	0.1	0.6	2.8	82.4	—	5.2	0.6
Administrators, etc.	0.8	—	1.2	1.0	3.5	0.5	5.3	1.2	2.4	0.2	0.6	2.7	0.1
Clerical workers	3.0	0.1	5.1	1.9	1.0	24.5	2.6	15.6	51.5	10.0	0.3	28.6	2.3
Sales workers	6.1	—	—	0.1	—	—	86.1	—	—	—	—	0.5	1.3
Farmers, etc.	60.0	99.8	—	0.1	—	—	2.5	—	0.1	—	0.1	0.4	0.3
Skilled operatives	16.4	—	86.9	94.0	39.2	57.3	0.9	72.0	3.4	0.4	4.2	7.1	6.5
Transportation, etc.	2.3	—	1.8	0.9	0.4	4.1	0.3	68.5	1.8	0.3	1.8	1.7	1.0
Manufacturing workers	12.5	—	4.8	89.7	1.7	13.1	0.3	2.2	1.1	0.1	2.3	3.0	4.4
Miners	0.1	—	78.8	—	—	—	—	—	—	—	—	—	0.1
Construction workers	1.4	—	1.4	3.4	37.1	40.1	0.3	1.4	0.6	—	0.1	2.4	1.0
General labourers	4.5	—	1.7	1.8	54.1	9.1	2.2	6.6	0.9	0.1	36.2	5.2	12.6
Service workers and others	7.5	0.1	4.0	0.9	0.5	5.5	0.4	3.9	38.8	6.8	58.6	50.3	76.4
<i>Bangladesh 1961</i>													
Total labour force (in '000')	16,871 100.0	14,462 100.0	1 100.0	735 100.0	84 100.0	11 100.0	574 100.0	202 100.0	146 100.0	184 100.0	322 100.0	91 100.0	58 100.0
Professional, etc.	1.1	—	7.1	0.2	0.2	3.9	0.4	0.5	3.3	93.1	0.1	7.8	0.8
Administrators, etc.	0.2	—	1.6	0.9	3.3	1.0	1.7	1.2	1.6	0.1	1.2	5.3	0.1
Clerical workers	1.0	—	2.9	1.5	1.1	14.9	4.3	14.8	51.0	3.7	0.4	19.1	7.9
Sales workers	3.0	—	1.5	0.2	0.1	0.2	89.8	0.3	0.2	—	0.4	4.3	1.2
Farmers, etc.	86.0	100.0	—	—	—	—	—	—	—	—	—	—	0.1
Skilled operatives	5.2	—	74.5	93.3	47.7	59.0	0.6	73.6	2.7	0.4	0.7	4.0	2.2
Transportation, etc.	0.8	—	13.1	0.3	0.1	1.6	0.1	69.8	1.1	0.1	0.2	0.3	0.5
Manufacturing workers	4.1	—	5.4	92.2	0.4	25.7	0.5	3.0	1.2	0.3	0.3	3.0	1.6
Miners	0.01	—	55.0	—	0.1	31.6	—	—	—	—	—	—	—
Construction workers	0.3	—	1.1	0.8	47.1	0.1	0.1	0.8	0.4	0.1	0.2	0.6	0.1
General labourers	1.1	—	8.2	2.2	47.3	8.4	1.9	4.1	1.6	0.2	33.3	2.3	1.0
Service workers, etc.	2.4	—	4.2	1.6	0.4	12.6	1.5	5.6	39.6	2.5	63.9	57.2	86.8

Sources: Census of Pakistan, 1951, Vol. 7, Table 6; Vol. 8, Table 13; Population Census of Pakistan, 1961, Vol. 4, Table 7.

Components of the Growth in Occupations

The technique of multiple standardization is applied to estimate the contributions of the growth effect, industry effect, and occupation mix effect in different occupations. The method used were developed by Palmer and Miller¹⁴ and were also applied by Gnanasekaran in a study of interrelations between industrial and occupational changes in the U.S. 1950-1960.¹⁵ The procedure and formulae are given in Tables V-6 and V-7. The results thus obtained should be interpreted with allowances for the following limitations:

Such a standardization ignores interaction effects. Also, there is an implicit assumption that the industry structure is exogenous. Although to a large extent it is the industrial structure which influences the occupational structure, in certain instances, the changes in the occupational composition of labour supply can independently influence the industry structure. For example, the agricultural sector in Bangladesh seems to have expanded because of an increased supply of farmers rather than the other way round. Also, in developing countries shortages of certain kinds of professional, managerial, technical and skilled manpower are frequently among the major bottlenecks to rapid industrial development. In this connection, there also exist independent intermediate types of supply factors such as type and extent of education and vocational training received by workers and workers' aptitudes and preferences for different kinds of work.

In spite of these limitations, this technique provides some dimensions for the interrelations between the structure of the economy, the industrial structure of the labour force, the occupational structure and, above all, the dynamics of changes in the occupational structure.

Table V-6 illustrates the relative magnitudes of the component of change in each occupation during 1951-1961. Among the expanding occupations, it is observed in both countries that the relative share of the labour force growth component in the total expansion varies inversely with the rank of the relative growth of occupations. For example, in Bangladesh only 28 percent (or 5 out of 18 thousand) of the increase in the number of professionals, *etc.* (the highest ranked occupation) was due to this factor, as compared to 95 percent (3,374 out of 3,551 thousand) for the lowest ranked occupation, farmers, *etc.* For most of the occupations, expanding or contracting, the contribution of labour force growth was the largest component and was usually bigger than the combined contribution of the structural effects. As expected from the discussion of Table V-4, structural factors played a much smaller role in the changes in occupation sizes in Bangladesh than in Pakistan. Since the labour force growth effect has no bearing on the occupational structure, we will discuss mainly the structural component effects.

In both countries, the industry effect is more dominating in its impact on the occupational structure of the labour force (for relative magnitudes of industry and occupational mix effects on the total structural change in each occupation, see col.(1) and col. (2) in Table V-7). A similar phenomenon was observed in the U.S. during 1950-1960.¹⁶ However, if we add the relative increase in "workers not classifiable"

¹⁴G.L. Palmer and A.R. Miller, *Industrial and Occupational Trends in National Employment* (Philadelphia: University of Pennsylvania, 1949).

¹⁵Gnanasekaran, *op. cit.*

¹⁶*ibid.*, Section IV.

Table V-6
Components of Changes in Occupations of the Labour Force, 1951—61
 (number in thousand)

Pakistan

Occupation*	Actual numbers (thousands)		Expected numbers in 1961		Changes due to			
	1951	1961	Assuming no structural change in industry or occupation mix	Assuming 1961 industry total with 1951 occupation mix	All factors	Labour force growth	Industry effect	Occupation mix effect
A. Expanding occupations	2,375	4,264	3,137	3,820	1,889	762	683	444
Professionals, etc.	103	227	136	230	124	33	94	-3
Administrators, etc.	53	98	70	78	45	17	8	20
Skilled operatives	923	2,075	1,219	1,685	1,152	296	466	390
Clerical workers	252	378	333	312	126	81	-21	66
Sales workers	525	772	693	718	247	168	25	54
Service, sport, etc. workers	519	714	686	797	195	167	111	-83
B. Contracting occupations	1,130	8,063	9,418	8,735	933	2,288	-683	-672
General labourers	922	566	1,218	1,259	-356	296	+41	-693
Farmers, etc.	6,208	7,497	8,200	7,476	1,289	1,992	-724	+21

*Not included here is the category "workers not classifiable" numbering one thousand in 1951 and 229 thousand in 1961.

Table V-6—Continued.

Bangladesh

Occupation*	Actual Numbers (thousands)		Expected numbers in 1961		Changes due to			
	1951	1961	Assuming no structural change in industry or occupation mix	Assuming 1961 indust- ry total with 1951 occupa- tion mix	All factors	Labour force growth	Industry effect	Occupation mix effect
A. <i>Expanding occupations</i>	11,657	15,581	15,262	15,482	3,924	3,605	220	99
Administrators, etc.	15	33	20	21	18	5	1	12
Professionals, etc.	122	190	160	184	68	38	24	6
Skilled operatives	609	896	797	822	287	188	25	74
Farmers, etc.	10,911	14,462	14,285	14,455	3,551	3,374	170	7
B. <i>Contracting occupations</i>	1,227	1,179	1,606	1,389	-48	379	-217	-210
General labourers	308	192	403	318	-116	95	-85	-126
Clerical workers	193	174	253	181	-19	60	-72	-7
Sales workers	502	524	657	577	22	155	-80	-53
Service workers etc.	224	289	293	313	65	69	20	-24

*Not included here is the category "workers not classifiable" numbering 2 thousand in 1951 and 111 thousand in 1961.

¹Col. (3)=Col. (1) x k, where k is the ratio of labour force size in 1961 to that in 1951. Value of k in Pakistan is 1.32085=(12,556/9,506) and in Bangladesh, 1.30925=(16,871/12,886).

²Expected size of each occupation_i in Col. (4) is calculated as $j=1$ (number of persons in industry_j in 1961 x ratio of occupation_i to industry_j in 1951); For example expected number of professionals, etc. in 1961 = $j=1$ (number of persons in each industry_j in 1961 x ratio of professionals, etc. in each industry_j in 1951) where, $j = 1, 2 \dots n$ industries.

to the total occupation mix effect (where it legitimately belongs) the total industry effect is only negligibly larger.

In Bangladesh, the pattern of relative changes in different occupations was what Gnanasekaran calls *reinforcing*, wherein both industry and occupation mix effects worked in the same direction, though no consistent pattern is observed in the relative magnitudes of the two effects among different occupations. For example, four-fifths of the above increase in the number of professionals, *etc.* was due to the expansion of related industries, while increases in the relative sizes of administrators, *etc.* and skilled operatives were primarily due to job pattern changes. Only the contracting occupations, general labourers and sales workers, seem to be influenced equally by the two structural effects.

Service, sport and recreation workers form the only occupation in Bangladesh to experience an *offsetting* pattern, *i.e.*, the industry effect and the occupation mix effect had opposite signs. If only the industry effect had been operative, this occupation would have expanded by 20 thousand persons. But the negative occupation mix effect was large enough to restrict the absolute increase to only 65 thousand—four thousand less than the proportionate share of this occupation in labour force growth.

It seems that in Pakistan, a somewhat different set of factors was operating which, as mentioned before, not only caused much larger structural changes in the occupational distribution of the labour force but also resulted in *offsetting* patterns of industry and occupation mix effects for the majority of occupations (5 out of 8). It is surprising to see that professionals, *etc.*—the occupation which showed the largest relative growth—underwent a negative occupation mix effect. However, the magnitude was negligible and the industry effect was sufficient to enlarge the proportion of professionals, *etc.* in the labour force to 1.8 percent in 1961 from 1.1 percent in 1951. This phenomenon is somewhat consistent with the experience in Bangladesh, where the occupation mix effect, though positive, contributed only one-fifth of the relative increase in this occupation.

Among other expanding occupations in Pakistan, service, *etc.* workers was the only other group to experience a negative occupation mix effect. As in Bangladesh, this effect was substantial and restricted the increase in the occupation's proportion of labour force to only 0.2 percentage points (from 5.5 percent in 1951 to 5.7 in 1961). Clerical workers was the only expanding occupation subjected to a negative industry effect which implies that the industries responsible for providing employment to clerical workers did not grow as fast as other industries. The other three expanding occupations, *viz.*, administrators, *etc.*, skilled operatives and sales workers, were the only occupations to show *reinforcing* patterns and were more or less evenly influenced by positive industry and occupation mix effects.

Among the contracting occupations in Pakistan, general labourers declined due to occupation mix effects¹⁷ and farmers, *etc.*, due to industry effects, though, as mentioned before, the former decline is only a statistical artifact.

¹⁷Part of the statistical explanation of this decline is that in 1951, general labourers' share in the industrial category "other services and unclassified" was 86.6 percent, but this was reduced to only 5.2 percent in 1961 (see Table V-5). The size of this industrial category being large in 1961, standardized figures of this occupation will be very large and will produce a large negative occupation mix effect on this account alone (see Table V-7).

Table V-7

Relative Contributions of Industry and Occupation Mix effects in the Changes in Occupation Structure of the Labour Force by Industrial Group, 1951-61

Pakistan

Occupation/Industry *	All industries		(D)								Other services & unclassified	
	Numbers (in '000')**	Percent	(A)	(B)	(C)	+ (E)	(F)	(G)	(H-1)	(H-2)		(H-5)
<i>Total structural effects</i>												
EXPANDING OCCUPATIONS												
Total	1,127 (8.98)	100.0	0.8	0.7	53.7	7.0	3.6	18.5	-5.6	9.3	4.0	7.6
Professionals, etc.	91 (0.72)	100.0	...	...	-4.4	3.3	-2.2	1.1	4.4	84.6	-1.1	14.3
Administrators, etc.	28 (0.22)	100.0	...	...	28.6	21.4	7.1	10.7	7.1	...	3.6	21.4
Skilled operatives	856 (6.82)	100.0	0.2	0.8	70.7	7.5	-1.4	19.3	-1.2	-0.1	2.6	1.6
Clerical workers	45 (0.36)	100.0	6.7	2.2	4.4	15.6	-15.6	84.4	-191.1	42.2	-6.7	157.8
Sales workers	79 (0.63)	100.0	...	...	-3.8	-1.3	103.8	...	...	-1.3	-1.3	3.8
Service, etc. workers	28 (0.22)	100.0	17.9	...	-10.7	...	-75.0	7.1	96.4	42.9	100.0	-78.6
<i>Industry effect</i>												
Total	683 (5.44)	60.6	...	0.4	36.6	1.7	2.3	7.7	-6.3	8.8	11.6	-2.4
Professionals, etc.	94 (0.75)	103.3	...	...	3.3	1.1	...	1.1	-1.1	100.0	...	-1.1
Administrators, etc.	8 (0.06)	28.6	...	...	14.3	3.6	3.6	3.6	-3.6	3.6	3.6	...
Skilled operatives	466 (3.71)	54.4	...	0.6	45.0	1.8	0.1	7.5	-0.5	0.2	0.4	-0.6
Clerical workers	-21 (-0.17)	-46.7	...	...	26.7	2.2	2.2	26.7	106.7	6.7	2.2	-6.7
Sales workers	25 (0.20)	31.6	...	...	2.5	...	29.1	...	...	...	...	...
Service, etc. workers	111 (0.88)	396.4	...	...	25.0	3.6	3.6	32.1	-60.7	7.1	450.0	-64.3

—Continued

Table V-7—Continued.

Occupation/Industry*	All industries		(A)	(B)	(C)	(D) + (E)	(F)	(G)	(H-1)	(H-2)	(H-5)	Other services & unclas- sified
	Numbers (in '000')**	Percent										
EXPANDING OCCUPATIONS Contd.												
	<i>Occupation mix effect</i>											
Total	444 (3.54)	39.4	0.8	0.3	17.0	5.3	1.3	10.8	0.7	0.5	-7.6	10.0
Professionals, etc.	-3 (-0.02)	-3.3	...	...	-7.7	2.2	-2.2	...	5.5	-16.5	-1.1	15.4
Administrators, etc.	20 (0.16)	71.4	...	...	14.3	17.9	3.6	7.1	10.7	-3.6	...	21.4
Skilled operatives	390 (3.11)	45.6	0.2	0.2	25.7	5.7	-1.5	11.8	-0.7	-0.4	2.2	2.2
Clerical workers	66 (0.53)	146.7	6.7	2.2	-22.2	13.3	-17.8	57.8	-84.4	35.6	-8.9	164.5
Sales workers	54 (0.43)	68.4	...	...	-6.3	-1.3	74.7	...	...	-1.3	-1.3	3.8
Service, etc. workers	-83 (-0.66)	-296.4	17.9	...	-35.7	-3.6	-78.6	-25.0	157.1	35.7	-350.0	-14.3
CONTRACTING OCCUPATIONS												
	<i>Total structural effects</i>											
Total	-1,355 (-10.79)	100.0	54.3	0.2	9.3	1.1	1.0	4.7	0.8	0.2	-10.5	38.7
General labourers	-652 (-5.19)	100.0	0.9	0.5	19.6	2.3	5.5	9.8	1.7	0.5	-21.6	80.8
Farmers, etc.	-703 (-5.60)	100.0	103.8	...	-0.3	...	-3.1	...	...	...	-0.1	-0.3
	<i>Industry effect</i>											
Total	-683 (-5.44)	50.4	53.5	-0.1	-4.5	-3.4	-0.1	-4.4	0.2	-0.2	-3.3	12.8
General labourers	41 (0.33)	-6.3	0.2	-0.3	-9.4	-7.1	-0.3	-9.0	0.5	-0.5	-6.9	26.5
Farmers, etc.	-724 (-5.77)	103.0	103.0	...	...	...	...	...	...	...	...	...
	<i>Occupation mix effect</i>											
Total	-672 (-5.35)	49.6	0.8	0.3	13.8	4.5	1.2	9.1	0.6	0.4	-7.2	26.0
General labourers	-693 (-5.52)	106.3	0.8	0.8	29.0	9.4	5.8	18.9	1.2	0.9	-14.7	54.3
Farmers, etc.	21 (0.17)	-3.0	0.9	...	-0.3	...	-3.1	...	...	...	-0.1	-0.3

—Continued

Table V-7—Continued.

Bangladesh

Occupation/Industry*	All industries Numbers	Percent (in '000')**	(A)	(B)	(C)	(E)	(D) + (F)	(G)	(H-1)	(H-2)	(H)	Other service & unclas- sified
EXPANDING OCCUPATIONS												
<i>Total structural effects</i>												
Total	319 (1.89)	100.0	4.55	-0.3	32.3	9.7	-1.6	-4.4	0.6	11.3	-0.3	-1.9
Administrators, etc.	13 (0.08)	100.0	...	...	46.2	23.1	15.4	15.4	...	-30.8	...	30.8
Professionals, etc.	30 (0.18)	100.0	-3.3	...	-3.3	...	-6.7	-6.7	3.3	130.0	-3.3	-10.0
Skilled operatives	99 (0.59)	100.0	-2.0	-1.0	99.0	28.3	-5.1	-14.1	1.0	...	...	-7.1
Farmers, etc.	177 (1.05)	100.0	100.0	...	...	...	...	...	...	...	...	...
<i>Industry effect</i>												
Total	220 (1.30)	69.0	53.3	-0.3	22.9	-2.2	-0.9	-12.2	-1.3	10.0	0.3	-0.6
Administrators, etc.	1 (0.01)	7.7	...	...	...	15.4	-7.7	...	-7.7	7.7	...	...
Professionals,	24 (0.14)	80.0	...	...	...	...	-3.3	-3.3	-6.7	96.7	...	-3.3
Skilled operatives	25 (0.15)	25.3	...	-1.0	73.7	-9.1	-1.0	-38.4	-1.0	1.0	1.0	-1.0
Farmers, etc.	170 (1.01)	96.0	96.0	...	...	...	...	...	...	...	...	...
<i>Occupation mix effect</i>												
Total	99 (0.59)	31.0	1.2	...	9.4	11.9	-0.6	7.8	1.9	1.3	-0.6	-1.3
Administrators, etc.	12 (0.07)	92.3	...	...	46.2	7.7	23.1	15.4	7.7	-38.5	...	30.8
Professionals, etc.	6 (0.04)	20.0	-3.3	...	-3.3	...	-3.3	-3.3	10.0	33.3	-3.3	-6.7
Skilled operatives	74 (0.44)	74.7	-2.0	...	25.3	37.4	-4.0	24.2	2.0	-1.0	-1.0	-6.1
Farmers, etc.	7 (0.04)	4.0	4.0	...	...	...	...	...	...	...	...	...

—Continued

Table V-7—Continued.

Occupation/Industry*	All industries Numbers	Percent (in '000')**	(A)	(B)	(C)	(D) + (E)	(F)	(G)	(H-1)	(H-2)	(H-5)	Other service & unclas- sified
CONTRACTING OCCUPATIONS												
<i>Total structural effects</i>												
Total	-427 (-2.53)	100.0	1.2	...	5.2	28.6	19.0	12.2	26.5	1.6	-5.9	11.7
General Labourers	-211 (-1.25)	100.0	0.9	...	14.7	57.8	-2.8	24.6	...	...	-24.6	29.5
Clerical workers	-79 (-0.47)	100.0	...	...	-10.0	-2.5	-15.2	-5.1	119.0	2.5	2.5	8.9
Sales workers	-133 (-0.79)	100.0	2.3	...	3.0	1.5	77.4	...	3.8	4.5	0.8	6.0
Service, etc.	-4 (-0.02)	100.0	...	...	-125.0	...	-100.0	100.0	375.0	-25.0	575.0	-700.0
<i>Industry effect</i>												
Total	-217 (-1.29)	50.8	...	...	-1.9	19.9	19.2	5.4	19.9	-0.5	-14.1	2.8
General workers	-85 (-0.50)	40.3	...	...	-2.8	38.4	0.5	6.6	0.5	...	-6.2	3.3
Clerical workers	-72 (-0.43)	91.1	...	...	-1.3	...	2.5	7.6	81.0	-1.3	-1.3	3.8
Sales workers	-80 (-0.47)	60.2	...	...	-0.8	0.8	59.4	...	1.5	-0.8	...	-0.8
Service, etc.	20 (0.12)	-500.0	...	...	...	25.0	...	75.0	457.0	...	-1150.0	75.0

—Continued

Table V-7—Continued.

Occupation/Industry*	All industries		(A)	(B)	(C)	(D) + (E)	(F)	(G)	(H-1)	(H-2)	(H-5)	Others service & unclasi- sified
	Numbers in ('000)**	Percent										
	<i>Occupation mix effect</i>											
Total	—210 (—1.24)	49.2	1.2	...	7.0	8.6	—0.2	6.8	6.6	2.1	8.2	8.9
General labourers	—126 (—0.75)	59.7	0.9	...	17.5	19.4	—3.3	18.0	—0.5	...	18.5	26.2
Clerical workers	—7 (—0.04)	8.9	...	...	—8.9	—2.5	—17.7	—12.7	38.0	3.8	3.8	5.1
Sales workers	—53 (—0.31)	39.8	2.3	...	3.8	0.8	18.0	...	2.3	5.3	0.8	6.8
Service, etc.	—24 (—0.14)	600.0	...	...	—125.0	—25.0	—100.0	25.0	—100.0	—25.0	1725.0	—775.0

* (A) Agriculture; (B) Mining and quarrying; (C) Manufacturing; (D)+(E) Construction and electricity, etc; (F) Commerce; (G) Transportation; (H-1) Government services; (H-2) Community services; (H-5) Personal services.

** Figures in parenthesis refer to the change in the share of occupation as a percentage of total labour force.

Formulae for calculating industry effect and occupation mix effect are as follows:

Industry effect for *i*th occupation in *j*th industry = Actual number in *i*th occupation in 1961—(A), where (A) = number in *j*th industry in 1961 x ratio of *i*th occupation to *j*th industry in 1951.

Occupation mix effect for *i*th industry = (A) — number in *i*th occupation in 1951 x *k*, where *k* is the ratio of labour force size in 1961 to that in 1951.

In the following, we will discuss in some detail the distribution of total and component structural effects by industrial origin for each expanding and contracting occupation. The discussion is based on the calculations in Table V-7, which disaggregates the industry and occupation mix effects for each occupation (in Table V-6) into the component industry groups.

Expanding Occupations by Specific Industry

Table V-7 reveals that an expanding occupation does not necessarily receive positive contributions from every industry. Infact, none of the expanding occupations in Pakistan or Bangladesh show the industry effect or occupation mix effect to be positive in all industries. Also, the structural effects for different occupations usually seem to be concentrated in a few industries.

The three leading expanding occupations of administrators, *etc.*, professionals, *etc.*, and skilled operatives in these countries reveal similar industrial distributions of total structural effects. For example, manufacturing, construction and other services, *etc.* account, respectively, for 29, 21, and 21 percent of the total structural increases in administrators, *etc.* in Pakistan—with corresponding percentages of 46, 23, and 31 in Bangladesh. Community services made a negative contribution equivalent to 31 percent to this occupation in Bangladesh; in Pakistan, it's share was zero. Likewise, in the relative increase of professionals, *etc.*, community services was the single most important contributor in both countries though more so in Bangladesh. And in both countries, manufacturing, commerce, and personal services contributed negatively to this group. Similarly, the changes in relative numbers of skilled operatives in both countries emanate primarily from manufacturing and construction. However, we expect more variation between the countries in the distribution of the component effects by industry than is revealed by the total structural effects.

Specifically, almost the entire increase in administrators, *etc.* occupation in Bangladesh was through favourable occupation mix effects within manufacturing, commerce, transportation, storage and communication, and other services, *etc.* The only notable industry effect was imparted by the construction industry. In Pakistan also, occupation mix effects contributed most of the relative expansion in this occupation (71 percent) but in a different set of industry groups, namely, construction, government services, and other services, *etc.* The contribution by manufacturing, which accounted for more than one-fourth of the total increase in this occupation, was equally divided between the two structural effects. It is important to point out that changes in the job patterns within the physical-goods-producing industries of manufacturing and construction, which generally employ blue-collar workers, were alone responsible for more than one-half of the relative increase in this white-collar occupation in Bangladesh and for one-third of the increase in Pakistan.

The entire increase in professionals, *etc.* in Bangladesh was the joint result of expansion in community services and favourable changes in the job pattern within this industry—the former contributing three times as much as the latter. In Pakistan, the industry effect emanating from community services was alone responsible for an increase equal to 100 percent in this occupation. There was a negative development

in professional job patterns within community services, which was offset by favourable occupation mix changes in other services, *etc.*

In both countries, the component structural changes in skilled operatives were almost entirely concentrated in manufacturing, construction and transportation, *etc.* However, the pattern by country was again different. In Bangladesh, the industry effect related to the manufacturing industry was responsible for an increase of about three-fourths of the expansion of this occupation. But the negative industry effects in transportation, *etc.* (—38 percent) and construction (—9 percent) reduced the share of the aggregate industry effect to only one-fourth of the total structural change. The occupation mix effects were positive in all three industries. In Pakistan, both effects were positive for these three industries, though the industry effect of manufacturing was larger than its occupation mix effect and the occupation mix effects of construction and transportation, *etc.* were larger than their industry effects.

The only other relatively expanding occupation in Bangladesh, farmers, *etc.* seems from this table to have expanded entirely (96 percent) because of the expansion of agriculture, forestry, fishing, *etc.*, but, as mentioned before, in fact the reverse is true.

Clerical workers, the fourth ranked expanding occupation in Pakistan, seems to have experienced diffused development. The overall industry effect was negative, primarily due to a contraction of government services, despite the positive industry effects of manufacturing and transportation, *etc.* The occupation mix effect was widely scattered among different industry groups. Positive development in job patterns favouring increased employment of clerical workers took place mainly in the service-producing industries of other services, *etc.*, transportation, *etc.*, and community services. This more than offset substantial negative occupational mix effects imparted by government services, manufacturing, and commerce. *Ceteris paribus*, government services would have caused a decline in the number of clerical workers equal to a little less than twice the relative increase that actually took place (a much larger decrease than for any other occupation). This is combined result of the decline in government services from 2.9 percent of total labour force in 1951 to 2.3 percent in 1961 and the decline in the relative share of clerical workers itself in government services from 65 percent in 1951 to 51 percent in 1961.

The increase in the relative numbers of sales workers in Pakistan was mainly through the industry effect (27 percent) and occupation mix effect (75 percent) generated by the related industry, commerce. Like clerical workers, service, *etc.* workers—the lowest ranked expanding occupation in Pakistan, underwent widely scattered effects, though, unlike clerical workers, the relative expansion of service, *etc.* workers was through favourable industry expansions. Most of the industries (particularly personal services, government services, transportation, *etc.*, manufacturing, *etc.*) show offsetting developments in industry and occupation mix changes for this group. On balance, positive total structural effects imparted by personal services, government services, and community services brought a small relative expansion in service, *etc.* workers after offsetting the negative total structural effects of commerce and other services, *etc.*

Contracting Occupations by Specific Industry

Leaving aside general labourers, farmers, *etc.* was the only contracting occupation in Pakistan. This occupation's relative decline was, as expected, entirely due to the decline of agriculture.

Government services in both countries contributed large negative reinforcing industry and occupation mix effects to clerical workers. But these negative effects in Bangladesh were not entirely offset as they were in Pakistan by favourable changes in job patterns observed within manufacturing, commerce and transportation, *etc.*, and placed clerical workers as the second ranked contracting occupation in Bangladesh.

Commerce, which accounted for the relative expansion of sales workers in Pakistan, was mainly responsible for the relative decline of this occupation in Bangladesh. Adverse industry changes in commerce were more important and contributed three-fifths of the decline.

The last contracting occupation in Bangladesh, service, *etc.* workers, was the only one to experience an offsetting pattern of industry and occupation mix effects. The favourable industry change in personal services was, in fact, the only positive industry change and was sufficient to nullify the adverse effects, imparting on balance a positive industry effect. However, it was this industry group which underwent significant changes in its job patterns. This produced negative occupation mix effects large enough to cancel not only the positive occupation mix effects elsewhere but also the positive industry effect. In the case of service, *etc.* workers in Pakistan, personal services also showed the largest favourable industry effect and the largest negative occupation mix effect, but the former effect was substantial enough to uphold personal services as one of the chief contributors to relative gains in the occupations.

An Overview of the Structural Changes in Industry and Occupation, 1951—1961

During the 1951—1961 census decade, the total change in occupational structure of the labour force was equivalent to 5.6 percent in Pakistan and 2 percent in Bangladesh (10.8 and 2.5 percent, respectively if craftsmen, *etc.* was divided into general labourers and skilled operatives). Changes of similar magnitude were also observed in the industrial structure (Table IV-9 and Table V-5). These structural changes in occupation and industry were closely related. In both countries, in fact, changes in the industrial structure were responsible for more than one-half of the total changes in the occupational structure. In the following we will evaluate the industry and occupation groups mainly responsible for these structural shifts of manpower and will look for consistencies or differences between the countries.

In Pakistan, manufacturing industry registered the maximum gain. Its proportion in the total labour force increased to 13.5 percent in 1961 from 9.7 percent in 1951 (Table IV-9). And along with transportation, *etc.* (which showed a proportionate expansion of one percentage point), it contributed more than half of the relative gain of the skilled operatives occupation, the single most important expanding

occupation (sharing 6.8 out of the 9 percentage points of relative expansion shown by all expanding occupations). Most of the favourable changes in occupation mix in Pakistan were also concentrated in manufacturing and transportation, *etc.* The relative expansion of community services (0.8 percent, computed from Table V-5), was alone responsible for the relative shift in professionals, *etc.*—the occupation which experienced the fastest growth in total employment in Pakistan. Similarly, the expansion of personal services (from 1.5 percent in 1951 to 1.9 percent in 1961) was mainly responsible for the relative gains secured by services, *etc.* workers. The decline in the proportion of farmers, *etc.* was entirely due to the contraction of agriculture, *etc.*

In Bangladesh, agriculture, *etc.* and manufacturing were the major gaining industries (showing gains of 1.6 and 0.5 percentage points respectively, see Table IV-9). Industry effects generated by the expansion of these two industries were mainly specific to the gaining occupations of farmers, *etc.* and skilled operatives, and these two occupations accounted for the bulk of the total structural change shown by expanding occupations. About three-fourths of the relative gain experienced by skilled operatives was, however, independent of the industry effects (Table V-7) and came through favourable occupation mix changes in construction, electricity, *etc.*, manufacturing, and transportation, *etc.*, as shown in summary Table V-8.

The losing industries in Bangladesh over this period were construction, electricity, *etc.*, commerce, government services, and transportation, *etc.* Their effect on the occupational structure is evident in Table V-8. These industries (except for transportation, *etc.*) singularly affected their related (contracting) occupations. Relative contraction of these industries explains more than one-half of the total negative shifts in the proportionate share of general labourers, clerical, sales and service, *etc.* workers. A substantial portion of the unfavourable changes in the job patterns for these occupations also took place within the above industries.

And so it seems that the general picture of structural changes in the labour force is largely consistent between the countries. Changes in the deployment of labour force by occupation are largely interlocked with changes in the industry structure as shown by the industry effects. However, important differences in the occupation mix effects by specific industries were observed. Some implications of these are discussed below.

Manufacturing seems to have undergone relatively more technological changes in Bangladesh than in Pakistan. Changes in job patterns in this industry were alone responsible for a little less than one-half of the total relative increase in administrators, *etc.* (compared to 14 percent in Pakistan). This is even more significant considering that the expansion of this occupation due to occupation mix effects as a proportion of the size of the occupation in 1961 was much larger than in Pakistan (12 out of 33 thousand persons or 36 percent compared to 20 out of 98 thousand or 20 percent in Pakistan; see Table V-6). The increase in engagement of clerical workers and service, *etc.* workers in this industry also reflects the modernization of manufacturing in Bangladesh. Conversely, negative occupation mix effects in manufacturing for these two occupation groups were observed in Pakistan. Increasing mechanization of this industry in both countries is reflected by substantial increases in its engagement of skilled operatives. In both, manufacturing accounted for one-

Table V-8

Major Industry Components of Change in Occupational Structure, 1951—61

Occupation	Industry effect	Occupation mix effect
<i>Pakistan</i>		
<i>Expanding occupations</i>		
Professionals, <i>etc.</i>	Community services	Other services, <i>etc.</i> and community services.
Administrators, <i>etc.</i>	Manufacturing	Other services, <i>etc.</i> ; construction and electricity, <i>etc.</i> ; manufacturing and government services.
Skilled operatives	Manufacturing and transportation, <i>etc.</i>	Manufacturing; transportation, <i>etc.</i> and construction, electricity, <i>etc.</i>
Clerical workers	Government services; manufacturing and transportation, <i>etc.</i>	Other services, <i>etc.</i> ; government transportation, <i>etc.</i> ; community services and manufacturing.
Sales workers	Commerce	Commerce
Service, <i>etc.</i> workers	Personal services; other services, <i>etc.</i> ; government services; transportation, <i>etc.</i> and manufacturing	Personal services; government services; commerce; community services; manufacturing and agriculture, <i>etc.</i>
<i>Contracting occupations</i>		
General labourers	Other services, <i>etc.</i>	Other services, <i>etc.</i> ; manufacturing; transportation, <i>etc.</i> and personal services.
Farmers, <i>etc.</i>	Agriculture	

Continued—

Table V-8—Continued.

Occupation	Industry effect	Occupation mix effect
<i>Bangladesh</i>		
<i>Expanding occupations</i>		
Administrators, etc.	Construction and electricity, etc.	Manufacturing; community services; other services, etc.; commerce and transportation, etc.
Professionals, etc.	Community services	Community services and government services
Skilled operatives	Manufacturing; transportation, etc.; construction and electricity, etc.	Construction and electricity, etc.; manufacturing and transportation, etc.
Farmers, etc.	Agriculture.	
<i>Contracting Occupations</i>		
General labourers	Construction and electricity, etc.	Personal services; other services, etc.; construction and electricity, etc. and manufacturing.
Clerical workers	Government services	Government services, commerce and transportation, etc.
Sales workers	Commerce	Commerce
Service, etc. workers	Personal services and government services	Personal services and other services, etc.

Sources: Table V-7.

fourth of the total occupation mix effect generated for this occupation. Here the influence was relatively greater in Pakistan as the increase in skilled operatives due to occupation mix effects as a proportion of the occupation size in 1961 was larger (19 percent compared to 8 in Bangladesh).

It is quite plausible that the tremendous growth of labour force in manufacturing in Pakistan left this industry largely traditional, family-owned and family-operated (66 percent of the male workers in manufacturing in Pakistan were own-account and unpaid family workers compared to 56 percent in Bangladesh; see Table IV-4). Lower growth in labour productivity (with index value of 113 in 1961 compared to 137 in Bangladesh, see Table IV-10) also seems to support this proposition.

There were also very different changes in the job patterns in the commerce industry in the two countries. In line with our findings about the more modernized character of at least the sub-category of wholesale trade in Bangladesh (see Chapter 4, Section 2) significant changes in the occupation mix of commerce took place in favour of administrators, *etc.*, (there was almost no such change in Pakistan), clerical workers, and service, *etc.* workers. Corresponding effects in the latter two occupations were significantly negative in Pakistan. In fact, in Pakistan large occupation mix change took place in favour of sales workers, making commerce probably even more of a traditional industry. Comparatively, the construction and electricity, *etc.* industries in Pakistan appeared to be becoming more complex in operation and organization as indicated by favourable job patterns created for the white-collar occupations of administrators, *etc.* and clerical workers. In Bangladesh, job patterns in these industries changed more in favour of skilled operatives and service, *etc.* workers. A comparatively large positive occupation mix effect was generated for clerical workers in transportation, *etc.* industry in Pakistan, but in Bangladesh, it was for administrators, *etc.* and skilled operatives.

Here one should not ignore the labour supply effect. If in Bangladesh increases in the labour force in these industries had been of a similar magnitude to those witnessed in Pakistan, then it is likely that the occupation mix effects would have been relatively suppressed. It is quite possible that with coming years of continuing large labour force growth in Bangladesh the labour supply may become the single most important factor regulating the occupation patterns of industries unless significant technological changes take place and the economy becomes more modernized and industrially developed.

Overall, the conclusion implicitly derived elsewhere remains valid; during the 1951—1961 decade the economies of both countries did not experience sufficient technological changes or modernization to produce the type of diversified occupation distributions of the labour force among industries observed in more developed economies.

SUMMARY AND POLICY IMPLICATIONS

Main Findings

Dimensional Aspects

The labour forces in Pakistan and Bangladesh have continuously increased since 1901 and were almost double their 1901 sizes (5.74 and 9.64 million, respectively) in 1961 (12.76 and 17.44 million, respectively). Although largely a function of population changes, these increases in labour force were not exactly parallel to that of population. In both countries, there were two distinct time trends; first 1901—1951, when the growth of labour force lagged behind population growth, and second, 1951—1961, when higher labour force growth was recorded. The first trend was partly caused by a younger age structure of population which resulted from the declining level of mortality during this period. The complete explanation is, however, wanting. The second trend was mainly the result of a change in the labour force definition between the 1951 and 1961 censuses such that more unpaid family workers, particularly female, were included in 1961 than in 1951.

The bulk of the labour supply in both countries has always been contributed by men. In 1961, when female participation in the labour force was reported to be at its highest level for any decade, males still constituted 91 percent of the total labour force in Pakistan and 85 in Bangladesh. As in most other countries, almost every male between the ages of 25 and 55 was in the labour force. However, as a result of youthful age structures of population, male crude activity rates in both Pakistan and Bangladesh were lower than the average for developed countries, which have more favourable age structures. This deficiency in age structure was partly compensated for by high labour force participation of males in both the younger and older age groups. As in most other developing countries, high rates of participation in these age groups are perpetuated by the predominance of agriculture, since it is relatively easy to start agricultural work at a young age and to continue it at an advanced age. Labour force activity of males in developing countries is also more prolonged because of the deficiency of educational opportunities and social security schemes. In this context, Pakistan (with lower activity rates in younger and older age groups than the average of agricultural countries) has a labour force pattern more similar to that of semi-industrialized countries than that of agrarian Bangladesh.

With relatively high age-specific activity rates and improved life expectancy at age 15 (53 years in Pakistan and 50 years in Bangladesh, though these are still much lower than in industrialized countries), the two countries in 1961 had the same expectation of active man-years at age 15 (45.3 in Pakistan and 45.8 in Bangladesh) as the average in developed countries around 1950 (45.3 years).

The fact remains that a relatively small proportion of the population has been providing the labour force for a rapidly growing population. This has been due primarily to low reported participation of women in economic activity. In fact the female activity rates, particularly in Pakistan, are among the lowest in the world. However, the economic activity of rural women was largely underreported (especially the unpaid family work), while that of women in the cities was depressed by traditionalism and by lack of education and scarcity of suitable jobs.

There were considerable regional differences in the male labour force participation rates, which can largely be explained by differences in the social and economic structure of the districts. The most important factors in this regard were high level educational attainment, school attendance and level of industrialization. The latter two had significant negative associations with the level of male labour activity. Labour activity was also influenced by family composition (nuclear versus non-nuclear family) and migration. The explanation of regional variations in female economic activity is inconclusive, due to inadequate measurement of the dependent variable.

Structural Aspects

The economies of Pakistan and Bangladesh share a very common feature of the developing world—the predominance of the agricultural sector. Bangladesh is particularly dependent on agriculture with 86 percent of its total labour force engaged in this sector as of 1961, as compared to the much smaller though still substantial 60 percent in Pakistan. The economic achievement level in Bangladesh is even more depressed than the high proportion of agricultural labour force implies. In 1961, the farm area per cultivator was only 1.54 acres (5.87 acres in Pakistan), and one-fourth of the total agricultural labour force was composed of landless agricultural labourers—the group which suffers most underemployment. The average productivity of an agricultural worker in both countries throughout the 1950's and early 1960's, if it did not decline, made no improvement.¹ However, in the later half of the 1960 decade, agriculture in Pakistan was making a break-through² and Pakistan is now on the verge of becoming self-sufficient in food. Such progress is absent from agriculture in Bangladesh.

While Bangladesh has remained almost stagnant in industrialization, a pace of rapid industrialization has been set in Pakistan. Between 1951 and 1961, the growth of non-farm employment in West Pakistan was 4.5 percent per annum and the proportion of non-agricultural labour force increased by 6 percentage points. The

¹The annual growth rate of 1.6 percent in agricultural production in the former Pakistan during this period was one of the lowest among the ECAFE countries. U.N., Economic Commission for Asia and the Far East, *Economic Survey of Asia and the Far East*, 1964 (New York: U.N., 1965), Table I-7.

²B.F. Johnston and J. Cownie, "Fertilizer Revolution," *American Economic Review*, September, 1969.

secondary or industry sector (mainly manufacturing and transportation, storage and communication) was responsible for seven-tenths of this shift. In East Pakistan, on the other hand, growth of employment in the industry sector was 0.81 percentage points less than the annual growth rate of the total labour force, and the infrastructure industries declined during 1951—1961 in proportion to the total labour force. In 1961, a large portion of non-agricultural labour activity in both provinces was still traditional, and it was particularly so in Bangladesh, where a substantial percentage of the non-agricultural labour force was found in retail trade and domestic services—the non-agricultural counterparts of agriculture.

On the positive side, the physical capacity to produce non-agricultural goods expanded significantly during the 1950's in both countries. The industry sector (mainly its sub-sector of manufacturing) was the major contributor to the real output growth of 3 percent per annum in Pakistan and 2 percent in Bangladesh.³ (Manufacturing was the only non-agricultural industry which increased its labour force share in Bangladesh.)

The regional picture for Pakistan depicts important economic disparities and diverse industrial structures. Within this semi-industrialized country, 6 out of the 12 divisions were characterized as agrarian on the basis of the 1961 census data of labour force structure. Bangladesh, on the other hand, with its very low overall industrialization level, had a large degree of homogeneity in the industrial structure of its regions. A pattern of complementary variation in relative labour force shares of manufacturing and services, the two most important sources of non-farm employment, was found, particularly in Pakistan. However, regional variations in the relative size of the total non-agricultural labour force were more highly correlated with the size of the industry sector than with the size of the tertiary or service sector (services and commerce). And it seems that where the expansion of industry sector lagged, service industries expanded to fill the gap. As in the history of developed countries, the industry sector may be the main dynamo of economic growth in coming decades.

In both 1951 and 1961, the occupational structure of the labour force of each country was parallel to the industrial structure—characteristic of the simple economic structure of a typical developing country. In the non-agricultural labour force, craftsmen, *etc.*, sales and service, *etc.* workers were the leading occupational groups, corresponding to the three leading industries, namely manufacturing, commerce and services. Changes in the occupational structure during 1951-1961 to a large extent paralleled the changes in the industrial structure. A little more than half of the shift in the occupational composition of the labour force in both countries was the result of shifts in the industry structure and the rest was due to changes in job patterns within industries. The occupation mix changes reflected the incidence of technological changes and more mechanization in the industry sector, which led to increased efficiency of the workers. This modernization especially in the industry sub-sectors manufacturing, transportation, storage and communication, was largely confined to Bangladesh. Commerce in Bangladesh also underwent some modernization.

³Manufacturing production in former Pakistan expanded at an annual rate of 12.9 percent between 1952-54 and 1961-63. With the exception of Japan, this rate was the highest in the ECAFE region. U.N., *op. cit.*, Table I-7.

The reporting biases, affecting the measures of involvement of females in economic activity, impair the analysis of structural aspects of female labour activity so that only some general inferences are warranted. The female labour force in both countries was primarily engaged in agriculture (71 percent in Pakistan and 82 percent in Bangladesh as of 1961), mainly as unpaid family workers. In non-agricultural industries also, most of the female workers were unpaid family workers or own-account workers. The strength of social and cultural barriers (particularly in urban areas) is evident in the fact that female engagement in non-agricultural activity was confined to a few industries, namely manufacturing (mainly textiles) and community and personal services and almost no young female workers were found in industries such as commerce where they might be exposed to men other than of their families.

Policy Implications

Questions of Manpower Utilization

At least in the urban areas, there is a great wastage of potential female labour supply. More serious, given the importance of high-level manpower as one of the key factors in economic growth, is the wastage of the services of highly educated women. Out of 99 thousand women with education of matriculation level and above in combined Pakistan and Bangladesh, only about 17 thousand were economically active in 1961. Education, particularly at high levels, is heavily subsidized by the government; and given the limited development funds, one wonders on purely economic grounds if women should not be excluded from higher level education unless more of them are to be employed. In Pakistan, however, the share of women in professional employment, especially medicine, nursing, and teaching, is quite substantial. An implication is that increased high level education of women may lead to their increased participation in the labour force in urban areas, particularly if more suitable jobs are made available. It is quite likely that in coming years of increasing education and economic development, female labour activity will increase. Here, the problem of maintaining consistency in planning strategy arises. Given the large incidence of underemployment, the objective of providing full employment to the male labour force appears to be in direct conflict with the exploiting of this additional female labour supply (if the planners so decide).

Compared to other countries, very high activity rates were recorded for males in younger ages in Pakistan and Bangladesh. From the point of view of long run economic development as well as social and moral considerations, a country stands to lose when children go to work for lack of the opportunity to obtain an education, which would enhance their productivity during their adult years. It is said that the "young people in school can be regarded as national assets, the value of which, in terms of their potential future products, increases with each addition to the investment in their schooling."⁴ Given the very low literacy level at present, investment in education should be given a higher priority over investment in physical means of production, although the two are not independent of each other.

⁴John D. Durand, "Population structure as a factor in manpower and dependency: problems of underdeveloped countries," *Population Bulletin of the United Nations*, No. 3, (New York: U.N., Department of Economic and Social Affairs, 1953).

Calculating the sum of the school attendance rate and the labour force participation rate for male population in the age group 10-19 years (excluding the disabled persons) and subtracting this sum from 100 percent, gives an estimate of the proportion of the population in this age category neither in school nor economically active. This proportion amounted to an alarming 22 percent in Pakistan in 1961⁵ (about 8 percent in Bangladesh). If true, this signifies not only a large waste of potential labour resources but also a disquieting social problem—requiring the serious concern of policy makers.

Both Pakistan and Bangladesh face a serious problem of employment. One set of labour force projections estimates that the growth of labour force in Bangladesh will be relatively large; its size will expand from 18.6 million in 1960 to a little less than 39 million in 1985; corresponding figures for Pakistan are 14 and 27 million.⁶ It is admitted that “under-employment is fairly widespread in rural areas at present. The labour force is estimated at about 37 million workers in 1965 (combined Pakistan and Bangladesh), of whom over 20 percent would be idle if the rest were to be fully employed.” Unemployment and underemployment are most widespread in Bangladesh.⁷ Alongwith these facts one should take into account the large labour force involvement in traditional industries. Under such conditions and with the limited amount of development funds available, special development strategies have to be evolved if a development plan is to be successful in meeting objectives of providing full employment and generating a substantial annual average growth rate in GNP. It goes without saying that Bangladesh is the area where the problem is very acute. Although it is not an aim of this study to lay out specific development strategies, at least a brief outline of a preferable approach to the development and employment problem in the context of empirical experience is in order here.⁸

The Japanese experience may provide a relevant model of growth. In Japan the juxtaposition of a labour-intensive manufacturing sector with a capital-intensive one (which adopted the latest technology) was used to absorb excess labour during the development process. The government “actively intervened to transfer second hand capital assets, which were considered to be inefficient for the higher level of modern technologies, from the larger firms which owned them to smaller firms, thus enabling the latter to lower their capital costs.”⁹ Such encouragement of “dualism” in the industrial sector may be the most satisfactory way in the short run of reconciling the aims of growth of output and maximum employment of labour. A study of the Pakistan-Indian situation has shown that normally the highest employment

⁵Only a small proportion of these 866 thousand persons in Pakistan would be in the armed forces.

⁶R.A. Karwanski, *Projections of Labour Force for Pakistan and Provinces, 1960-1990* (Islamabad: ILO/UNDP Manpower Planning Project, 1969). See also Lee L. Bean, “Demographic Aspects of Potential Labour Force Growth in Pakistan,” International Union for the Scientific Study of Population, *Sydney Conference, 1967, Contributed papers* (Sydney, 1967). Swedish R. Bose, “Labour Force and Employment in Pakistan, 1961-1980: A Preliminary Analysis,” *The Pakistan Development Review*, Vol. III, No. 3, Autumn 1963, pp. 371-376.

⁷Planning Commission, Government of Pakistan, *The Third Five Year Plan, 1965-70* (Karachi: The Manager of Publications, 1967), p. 25.

⁸For a detailed discussion of employment policies, see Ghazi M. Farooq, “Population Growth, Manpower, and Employment,” in Warren C. Robinson (ed.), *Population and Development Planning* (New York: A Population Council Publication, 1975).

⁹T. Watanabe, “Economic Aspects of Dualism in the Industrial Development of Japan,” *Economic Development and Cultural Change*, Vol. XIII, April 1965, p. 300.

per unit of capital is found in very small firms (20 workers or less). Available evidence shows that such firms sometimes have the distinct short-term advantages of not only lower capital-labour ratios but also lower capital-output ratios than the average for large firms.¹⁰

We also want to stress the need for technological change—to gear an economy to meet the employment challenge,¹¹ and to ensure at least that present labour productivity will be maintained if it cannot be increased. Especially in Pakistan, the pressures of an overabundant labour supply in some industries during 1951-1961 are quite evident. Transportation, storage, and communication, and services suffered set-backs. Labour productivity, particularly in transportation, *etc.*, declined significantly. In Bangladesh, some positive effects of technological change and increasing mechanization are observed, as mentioned earlier, probably only because of the stagnant employment situation in the non-agricultural sector. It is an obvious conclusion that shift of labour force to the non-agricultural sector in the future, unless accompanied by significant technological changes and improvement in the quality of workers, will only thwart the efforts to promote industrial development. Besides industry, special attention should be paid to the agricultural sector¹² particularly in Bangladesh.

Manpower Planning

The planners are important users of the results of labour force studies. They should be able to comprehend the interrelation between the composition of economic production and the labour force structure. They can ill afford to allow the market mechanism to straighten out the structural imbalances which occur in the course of social and economic progress. The structural relationships are usually dealt with as follows:

- (i) Assuming investment-output ratios by industry, the development plan lays down the investment outlays for each industry and specifies the target rates of growth for GNP and output in different industries.
- (ii) As seen in Chapter 4, the relationship between output and employment varies from industry to industry. Assuming the labour productivity of an industry,¹³ its output growth can be translated into the number of additional workers required.
- (iii) As seen in Chapter 5, there is a close relationship between the industry and occupational structures of the labour force. So, by applying the matrix of job patterns within each industry, the increased demand for manpower can be broken into occupational categories.

¹⁰J.H. Power, "Small Industrial Enterprises in Bomaby, Delhi and Karachi," *The Pakistan Development Review*, Vol. II, No. 3, Autumn 1962.

¹¹For a useful analysis of the need for "technological changes biased in the labour-using (or capital-saving) direction to increase industrial labour absorption, see G. Ranis, "Allocation Criteria and Population Growth," *American Economic Review*, May 1963, pp. 619-633. He supports his arguments with the experience of Japan, where continuous capital shallowing (*i.e.*, declining capital-labour ratio) was observed in the initial stages of development. Japan made, "full use of her potential for adopting capital-saving innovations to accelerate the redundant agricultural labour transfer and absorption process." *Ibid.*, p. 632.

¹²For some suggestions, see Johnston and Cownie, *op. cit.*

¹³Generally fixed coefficients of labour productivity are used for planning. However, as the results in Chapter 4 show, the labour productivity of an industry may not remain constant due to technological changes, *etc.* and there is need for constant revision of labour productivity coefficients.

- (iv) Finally, an assumed vector of educational levels for each occupation is generally used to predict the demand for manpower at various levels of education. A study of relationships between the educational level and occupational structure has, however, revealed the weakness of such assumptions, showing that these vectors vary greatly over time and between countries at different levels of social and economic development.¹⁴

While in the present study we have not elaborately discussed the relationship between education and occupational structure, some implications for educational planning can be drawn from the analysis of occupational patterns and their changes. For example, the large increases observed in administrative workers, *etc.*, skilled operatives, and other skilled manpower categories (the demand for which will continue to expand with industrial development) illustrate the need for greater emphasis on technical and specialized education and vocational training. In this regard, it may be mentioned that educational policies have not until recently been very practical; the emphasis has been mainly on general education. As a result, too many graduates in humanities and social sciences have been produced to compete for a limited number of jobs appropriate to their education. (The same phenomenon is observed in India). On the other hand, there is a continued scarcity of administrative workers, *etc.*, technicians, physical scientists, and other skilled manpower categories.

Inter-Country and Regional Economic Disparity

Using the structure of labour force as a criterion, we have observed a serious disparity in the economic achievement level between Pakistan and Bangladesh. We have estimated that if Pakistan maintains its present tempo of industrialization, by 1985 the employment structure will be transformed into 60 percent non-agricultural and 40 percent agricultural (from the present 40:60 proportion). On the other hand, if Bangladesh is to reach the present employment structure of Pakistan (*i.e.*, 60 percent agricultural and 40 percent non-agricultural), it has to maintain a "coefficient of differential growth" of 4.3 percent per annum in non-agricultural employment throughout the 1980's. This means that the total non-agricultural employment growth should be 7.3 percent per annum if the total labour force growth rate in the country remains at the present level of 3 percent. It is very difficult, if not impossible, to maintain such a high pace of industrialization.

Within Pakistan, there was substantial disparity in the level of industrialization among regions. Six of the 12 divisions in 1961 were distinguished as agrarian. In these regions, as in Bangladesh, the traditional industries of retail trade, personal services, *etc.* filled the gap in non-agricultural employment.

In fact, the six more developed divisions of Pakistan, namely Multan, Quetta, Rawalpindi, Sargodha, Lahore and Karachi, particularly the last four, contained most of the industrial capacity of the country. While the share of Rawalpindi, Sargodha, Lahore and Karachi divisions of the total Pakistani labour force was 46 percent in 1961, their shares of labour force in manufacturing was 61 percent; machinery manufacturing 76 percent; electricity, gas, *etc.*, 64 percent; transportation, storage, and communications 53 percent; and services, 55 percent. It is very likely that unless the recent trends are checked, these regions will continue to absorb major

¹⁴M. Sicron, *Interrelationships between the Educational Level and Occupational Structure of the Labour Force*, unpublished Ph.D. dissertation (University of Pennsylvania, 1968).

shares of the industrial development in the country. Yet their development should not be hampered, as to do so would adversely affect the development of the country as a whole. Here is a special problem of planning, as it aims, justifiably, at an equitable geographical distribution of economic progress. Persistence of marked economic inequalities among regions has been known to lead to massive political unrest; and political stability is among the prerequisites for sustained economic growth in a developing country.

The Data

The limitations of the present study are due in large measure to the poor quality of the data and their limited supply. Pakistan and Bangladesh, like other developing countries, are in the initial stages of statistical development. Myrdal in his celebrated work, *The Asian Drama*, paints a rather distressing picture of the reliability and adequacy of data in South Asian countries including Pakistan and Bangladesh.¹⁵ In overly harsh but relevant words he condemns—"the utterly careless way in which almost all economists—and the planners—are using figures which are often not worth the paper they are printed on."¹⁶

Intensified efforts are required to improve the quality of the data (the basic source is still the censuses). One way of discovering biases is by post-enumeration sample surveys. Such techniques have been used efficiently in the United States and their use is spreading among other countries. We also stress the need for generating data on a regular basis through sample surveys. The time interval between censuses is too long. In this connection it is important to realize that, given the very limited supply of funds and trained staff capable of carrying out surveys, only the most needed data should be collected. An all too common practice in developing countries has been wasteful copying of the statistical programmes of advanced countries.¹⁷ It is also important that the concepts adopted in the advanced countries should not be blindly applied in the developing countries. Their own peculiarities and special needs should be taken into account.

We feel, however, that we were able to reach some important and valid conclusions in the present study. Data limitations are not always legitimate grounds for researchers and particularly economists in developing countries to postpone undertaking long due basic studies. It is important to undertake such studies now in order to find out where the data are inadequate and how they can be improved. There is a close relationship between research efforts and the generation of adequate data. It is important to suppress "an excessive reluctance on the part of indigenous analyst to question official data... of believing they comprehend the situations being faced without the need of statistics and therefore need not be concerned with the probing for biases and other errors."¹⁸

¹⁵Gunnar Myrdal, *Asian Drama: An Inquiry into the Poverty of Nations* (New York: Pantheon, 1968).

¹⁶G. Myrdal, "Reply to Some Comments on the Treatment of the Problems of the Inadequate Statistics of South Asia Countries in *Asian Drama* by Gunnar Myrdal," *Journal of Economic Literature*, Vol. VIII, March 1970.

¹⁷In this connection a very useful study is J.E. Ely, "Some Comments on the Treatment of the Problems of the Inadequate Statistics of South Asia Countries in *Asian Drama* by Gunnar Myrdal," *Journal of Economic Literature*, Vol. VIII, March 1970, pp. 46-52. Also see P.C. Mahalanobis, "Statistics as a Key Technology," *The American Statistician*, Vol. 19, No. 2, April 1965, pp. 43-46.

¹⁸Ely, *op. cit.*, p. 49.

Appendix A

EXPLANATORY NOTE ON LABOUR FORCE ESTIMATES FOR FORMER PAKISTAN, 1901—1931

Methodology Applied in the Labour Force Estimates

A person was treated as economically active if returned in the census as *occupied*. But the persons falling in such occupation groups as "receipt of unearned income" and "non-productive" were excluded. Specifically, the following were the criteria:

Workers: All "actual workers" reported as having productive occupations. In the 1931 census the work force also included all "working dependents" following productive occupations.

Non-Workers: (i) all "dependents" and (ii) "actual workers" reported as having non-productive occupations. Non-productive workers included "disreputable workers"¹ (prostitutes, receivers of stolen goods, witches, *etc.*), "independent workers" in 1901 census and persons reported as "living principally on their income" in 1911, 1921, and 1931 censuses (included were non-cultivating proprietors taking rent in money or kind, receivers of total income from house rent, shares and other property not land, pensioners, receivers of allowances from patrons or relations, educational or other endowments, scholarships, *etc.*) and "unproductive workers" (mendicants, monks, nuns, inmates of asylums, jails and alm houses, beggars, vagrants, and other unclassified non-productive persons.)

The 1901-1931 censuses excluded large numbers of persons from the tabulation of economic activity although they were counted in the population enumeration. In this appendix, we have referred both to the total population and the classified population (*i.e.*, the population tabulated by economic activities) for each census year, by sex. The classified population was used for calculating labour force participation rates.

Coverage of the Area and Geographical Administrative Scheme Used for Analysis of Regional Patterns

The censuses of British India (1881—1931) covered the areas in former Pakistan (*i.e.*, combined Pakistan and Bangladesh), Burma, the protectorate of Aden and

¹"Disreputable workers" are excluded to make the British India census consistent with the Pakistani census as the latter excludes this category from the labour force concept.

present day India (excluding Goa, Daman and Diu). Former Pakistan was separated from British India in 1947 and from Burma in 1936.

For consistent series of population and labour force by major geographical regions, 1901-61, a scheme based on the 1951 census administrative classification of geographical regions is applied. Referred to as the "1951 Scheme" it is discussed below:

1951 Scheme

The 1951 census classification of regions was more or less identical to the one used in the British Indian censuses of 1901-41. Thus it can be used, with certain modifications, in the construction of historical series of labour force participation measures by major geographical regions from 1901 to 1961. The major geographical areas in the scheme are as follows:

1. *Province of East Bengal*. This is further divided into the divisions of Rajshahi, Khulna, Dacca and Chittagong. These divisions comprise present day Bangladesh.

2. *Baluchistan*. Known as Baluchistan State in the British India censuses, this consists of the province of Baluchistan plus the states of Baluchistan States Union. Due to the lack of separate data for these state in the pre-independence censuses, we will treat the province of Baluchistan and state as one geographic unit. The states, however, contribute only a small segment of the total population.

3. *North Western Frontier Province (N.W.F.P.)*. The populations of the states and tribal areas of the Frontier regions have never been adequately enumerated. N.W.F.P. here refers only to the province.

4. *Punjab and Bahawalpur State*. This consists of the province of Punjab (referred to as West Punjab in the British Indian censuses) and Bahawalpur State. These two can be treated as one unit for geography, language and economic structure. Figures for the province and State are also given separately.

5. *Sind and Khairpur State*. This consists of the province of Sind and the State of Khairpur. They are treated in the same fashion as Punjab and Bahawalpur State.

6. *Federal Capital Area of Karachi*. Following independence in 1947, Karachi, formerly part of the province of Sind, was made the national capital and given special status. In the pre-independence censuses separate figures for Karachi were not given. So, in 1901-31, Karachi is treated as part of the Sind province.

Most of the district units in the above six British Indian areas came intact to former Pakistan at the time of independence. The Lahore district, however, was transferred to Punjab in Pakistan except for part of one *tehsil*. Similarly, part of one *tehsil* of Indian-bound Gurdaspur district was assigned to Pakistan. In the absence of occupational data below the district level, we took the whole of the Lahore district as part of Pakistan and excluded the whole of Gurdaspur district. For the same reasons, of United Bengal the whole of Malda and Jalpaiguri were taken as part of

India and all of Dinajpur district as part of Rajshahi division in Bangladesh. The pre-independence populations of the districts of Nadia in the Khulna division (which was divided approximately half and half between India and Bangladesh) and Sylhet in Chittagong division (three thanas and part of a fourth were transferred to India) were taken as reported in the 1961 District Census Reports of Pakistan (which reported population figures for each census year from 1901 to 1961), and labour force figures were adjusted proportionately according to their population totals for each census year.

Comparisons of the Present Estimates with Estimates Derived From Thorner's Computations

Nearly the same procedures as described above were adopted by Daniel and Alice Thorner² and Kalra³ for their estimates of the Indian Union (*i.e.*, present day India) with the exception that they halved the figures for Nadia and took the whole of Sylhet as part of former Pakistan. This is the cause of some discrepancy between our estimates of population and labour force for former Pakistan and those made by the Thorners for India.

In Table A-1 we have compared estimates derived from the Thorners' computations and our estimates for the classified population and labour force. Estimates for former Pakistan from the Thorners' computations were determined by subtracting the figures for Burma, Aden and the Indian Union from those of British India.⁴

As shown in the Summary Table, the estimates based on Thorners' computations for the classified population are slightly higher than ours for each census year. The difference is due to the different procedures for estimating the population of Sylhet and Nadia (renamed Kushtia in the Pakistan census)⁵.

The range of divergence is 44.8 thousand in 1901 to 460.5 thousand in 1921. The absolute differences between the two sets of estimates are more pronounced for males than for females. In terms of percentages of the population in the labour force the maximum difference is 1 percentage point (our estimate being 32.3 percent compared to 31.3 percent of the Thorners) for the total, 1.5 for males (56.3 compared to 54.8) and 0.5 (5.6 compared to 5.1) for females, all in the census year 1921.

These differences are reasonable. Estimates from the Thorners' computations for former Pakistan were computed as residuals whereas ours were the result of

²Daniel and Alice Thorner, *The Working Force in India, 1881—1951*. Census of India, 1961 Project, Indian Statistical Institute, Bombay Branch, mimeographed.

³B.R. Kalra, "A Note on Working Force Estimates, 1901-1961," Census of India, 1961, *Final Population Totals, Paper No. 1 of 1962* (Delhi: The Manager, Government of India Press).

⁴The Thorners' study did not give labour force estimates for Burma. It provided estimates for only the Indian Union and *subtracted* areas (*i.e.*, former Pakistan plus Burma). Applying the same criteria as used for Pakistan, we have constructed the labour force series for Burma, 1901-31, shown in Table A-1.

⁵For example, the comparison of Thorners' and our estimates for the classified population of Sylhet is as follows:

	1901	1911	1921	1931
Thorners' estimates	2,241,848	2,472,671	2,541,341	2,724,342
Present estimates	2,030,912	2,240,838	2,297,720	2,466,410
Thorners did not give estimates for Nadia (Kushtia).				

consolidation of district data for the areas included in former Pakistan. In both studies, some arbitrary judgements were made in the cases where districts were divided between the countries and where detailed information regarding non-productive activities was not available.⁶ For instance, the figures for non-cultivating landholders and other such categories were not available for some areas of former Pakistan. The common practice was not to report at the district level the groups in orders and suborders whose strength were less than 1,000.

The two sets of estimates, however, support each other in showing nearly the same trend of labour force participation over time.

Summary Table

Comparison of Present Estimates and Estimates derived from the Thorners' Computations of Classified Population and Labour Force Participation by Sex, Former Pakistan, 1901-31

	1901		1911		1921		1931	
	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)
<i>Classified Population*</i> (in thousand)								
Both Sexes	45,610	45,474	49,481	49,282	51,682	51,477	57,036	56,821
Males	23,721	23,653	25,945	25,843	27,215	27,109	30,116	30,005
Females	21,889	21,822	23,536	23,439	24,467	24,368	26,920	26,816
<i>Percentage of classified Population in Labour Force</i>								
Both sexes	33.6	33.8	32.1	32.5	31.3	32.3	26.8	27.7
Males	58.9	59.3	56.8	57.3	54.8	56.3	47.2	48.5
Females	6.2	6.2	4.9	5.1	5.1	5.6	4.0	4.4

Sources: Table A-1

*Population tabulated by economic activities.

(1) Estimates derived from the Thorners' computations.

(2) Present estimates.

⁶Perhaps this is, in part, the explanation for some differences (though not very significant ones) between the Thorners' estimates and Kalra's for the Indian Union working force.

Table A-1

Present Estimates of Population and Labour Force and Estimates Derived from the
Thorners' Computations, 1901-31

(in thousands)

	Both sexes			
	1901	1911	1921	1931
Total Population				
India* ...	299,361	315,156	318,942	352,838
Indian Union ...	238,179	251,905	251,210	278,870
Burma ...	10,491	12,115	13,212	14,667
Former Pakistan ...	45,648	51,090	54,463	59,249
Classified Population				
India* ...	294,188	313,470	316,055	350,530
Indian Union ...	238,170	251,904	251,148	278,794
Burma ...	10,364	12,039	13,169	14,647
Former Pakistan ...	45,610	49,481	51,682	57,036
Former Pakistan (present estimates) ...	45,475	49,282	51,477	56,821
Pakistan	16,502	17,677	18,243	21,248
Baluchistan & States Union ...	811	835	800	869
N.W.F.P. Province ...	2,112	2,210	2,294	2,472
Punjab & Bahawalpur State ...	10,169	10,894	11,676	13,793
Province ...	9,448	10,113	10,895	12,809
Bahawalpur State ...	721	781	781	985
Sind & Khairpur State ...	3,410	3,737	3,473	4,114
Province ...	3,211	3,514	3,279	3,887
Khairpur State ...	199	224	193	227
Bangladesh	28,973	31,606	33,235	35,573
Rajshahi Div. ...	7,459	7,996	8,141	8,311
Khulna Div. ...	6,243	6,396	6,582	7,044
Dacca Div. ...	8,502	9,609	10,214	10,925
Chittagong Div. ...	6,769	7,635	8,298	9,293
Labour force				
India* ...	135,810	143,405	140,373	140,746
Indian Union ...	115,716	121,019	117,670	119,438
Burma (present estimates) ...	4,762	6,487	6,553	6,019
Former Pakistan ...	15,332	15,899**	16,150	15,289**
Former Pakistan (present estimates) ...	15,377	16,007	16,610	15,717
Pakistan	5,737	6,025	6,079	6,762
Baluchistan & States Union ...	290	291	278	292
N.W.F. Province ...	718	713	825	870
Punjab & Bahawalpur State ...	3,316	3,704	3,725	4,300
Province ...	3,082	3,453	3,470	3,982
Bahawalpur State ...	234	251	255	318
Sind & Khairpur State ...	1,413	1,317	1,251	1,301
Province ...	1,334	1,240	1,176	1,225
Khairpur State ...	79	77	74	76
Bangladesh	9,640	9,982	10,531	8,955
Rajshahi Div. ...	2,645	2,704	2,795	2,308
Khulna Div. ...	2,063	2,079	2,020	1,927
Dacca Div. ...	2,720	2,950	3,189	2,508
Chittagong Div. ...	2,212	2,249	2,526	2,212

—Continued

Table A-1—Continued.

Males				Females			
1901	1911	1921	1931	1901	1911	1921	1931
149,952	161,339	163,996	181,829	144,409	153,817	154,947	171,009
120,837	128,327	128,509	143,022	117,342	123,578	122,700	135,848
5,342	6,183	6,757	7,491	5,149	5,932	6,455	7,177
23,743	26,797	28,691	31,284	21,905	24,292	25,773	27,965
149,866	160,448	162,645	180,621	144,322	153,022	153,590	169,909
120,832	128,326	128,476	142,991	117,338	123,578	122,671	135,803
5,282	6,145	6,736	7,481	5,081	5,894	6,434	7,167
23,721	25,945	27,215	30,116	21,889	23,536	24,467	26,920
23,653	25,843	27,109	30,005	21,822	23,440	24,368	26,816
8,937	9,702	10,059	11,709	7,565	7,974	8,184	9,539
446	466	461	488	365	368	339	380
1,152	1,194	1,271	1,360	960	1,016	1,023	1,111
5,470	5,980	6,382	7,554	4,700	4,914	5,294	6,239
5,074	5,550	5,952	7,009	4,374	4,564	4,943	5,800
396	430	430	545	325	350	351	440
1,871	2,061	1,944	2,306	4,540	1,676	1,528	1,808
1,762	1,939	1,837	2,181	1,449	1,574	1,442	1,706
109	122	107	125	91	102	86	102
14,716	16,141	17,050	18,296	14,257	15,465	16,184	17,277
3,838	4,126	4,226	4,318	3,621	3,840	3,915	3,993
3,183	3,278	3,395	3,645	3,060	3,117	3,187	3,399
4,297	4,892	5,230	5,617	4,205	4,716	4,983	5,308
3,398	3,844	4,199	4,716	3,371	3,791	4,099	4,577
93,812	97,703	96,414	101,112	41,998	45,702	43,959	39,635
76,804	79,308	77,602	82,772	38,912	41,711	40,069	36,666
3,003	3,659	3,901	4,128	1,730	2,828	2,652	1,891
13,975	14,736**	14,911	14,212**	1,356	1,163**	1,238	1,078**
14,016	14,804	15,252	14,541	1,361	1,203	1,358	1,177
5,098	5,528	5,642	6,304	639	497	438	458
290	284	272	278	1	7	7	14
653	671	802	821	64	42	24	49
3,030	3,383	3,435	3,982	285	321	290	318
2,809	3,144	3,193	3,674	273	309	277	308
222	239	242	307	12	13	13	10
1,124	1,190	1,134	1,223	289	127	117	78
1,061	1,116	1,065	1,148	273	124	112	77
63	74	69	74	16	3	5	2
8,918	9,276	9,611	8,237	722	706	920	718
2,438	2,519	2,577	2,128	207	185	218	180
1,943	1,951	1,863	1,813	120	128	157	114
2,584	2,796	2,968	2,284	136	154	221	225
1,953	2,010	2,203	2,012	259	239	323	200

Sources: Appendix B.

*India includes Indian Union, Former Pakistan, Burma and Aden.

**Includes Aden (Indian Union figures did not include Aden in 1911 and 1931).

Appendix B

1901—1931 CENSUS REFERENCES

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Appendix C

AN AGGREGATIVE MODEL OF LABOUR FORCE PARTICIPATION IN PAKISTAN AND BANGLADESH*

Most growth models and even modern econometric models do not make adequate labour force assumptions. A very common but vulnerable one is of the form:

$$L(t) = L(0) e^{rt}$$

i.e., labour force grows at a constant exponential rate, r . (The same type of assumption is generally made for population.) Such assumptions stem from the common belief that the determinants of labour force participation do not change significantly at least in the short run. This may be true in developed countries,¹ but given the numerical importance of marginal workers, particularly women and children, in the developing countries the supply of labour even in the short run cannot be taken as exogenous. For example, the rapid demographic, economic, social and cultural changes that are taking place in many developing regions, particularly in Asia, can rapidly alter female participation in labour activity.

The flow diagram in Figure C-1 outlines a simple model of the factors determining labour force dimensions. Demand for labour is taken as an implicit determinant of labour supply and can be measured in "economic factors" (technically from a labour requirements production function). The model disaggregates population into different sex-age segments and each segment is studied as a separate entity.² This is necessary as the size of each group is determined differently and each group contributes to the national product of economic goods and services to a different

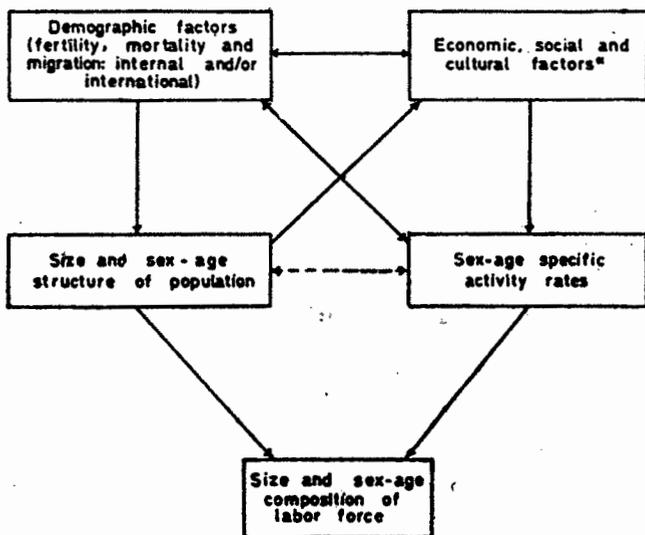
*This appendix is a revised version of the author's paper, "An Aggregative Model of Labour Force Participation in Pakistan," *The Developing Economies*, Vol. X, No. 3, September 1972, pp. 267-289.

¹ Given the great complexity of the developed economies, there is all the more pressing need for revising the assumptions of exogeneity for population and labour force in the models for these countries, particularly if these models are to be used for policy purposes. What is required is a sub-model of labour force divided into different segments which show the factors affecting each segment separately and how they do so. Generally, as put by Behrman and Klein, the inclusion of demographic variables in the Harrod growth model is "analogous to the extension of the simple Keynesian system to fit it to the real world." J. Behrman and L.R. Klein, "Econometric Growth Model for the Developing Economy," W.A. Eltis, et. al. (ed.), *Induction, Growth and Trade: Essays in Honor of Sir Roy Harrod* (Oxford: Clarendon Press, 1970).

² The different sex-age segments suggested are: males 10-19, 20-59, 60 and over; females 10-19; married women 20 and over; single women 20 and over and other women 20 and over.

degree. The complexity of the model will vary with the particular segment of the labour force under consideration.³

Figure C-1. Flow Diagram of Basic Determinants of the size of Labour Force



— Line refers to strong relationship

.... Line refers to weak relationship

- **Economic factors**—GNP per capita, average earning level for workers, employment opportunities and their geographical distribution industrial structure, occupational structure, organization of production, etc.
- Social factors**—educational opportunities and educational attainment, urbanization, marital laws and characteristics, etc.
- Cultural and other factors**—traditional attitudes towards participation of different groups, particularly of women, in economic activity, religious influences on attitudes to work, etc.

A note of warning—there are significant interactions among the factors determining labour activity, as depicted by the flow diagram. For example, migration is generally motivated by economic factors. Fertility and female participation rates in the middle adult age groups may form a cobweb type of relationship; fertility

³ For example, the quantitative determination of child labour can be expected to be relatively simple. A United Nations study, using data for thirty countries, found an almost one-to-one functional relationship between the activity rates for young persons and the combined factors of school attendance and the degree of industrialization; the latter measured as the percentage of active males in agriculture and related activities. Coefficients of determination were, respectively, 0.89 and 0.94 for males, 10-14 and 15-19 years of age, U.N., Department of Economic and Social Affairs, *Population Growth and Manpower in the Philippines*, Population No. 32 (New York, 1960), p. 55. On the other hand, the determinants of female economic activity may be very complex.

may affect the level of work participation and vice versa. Economic factors may have profound influences on social and cultural factors and the latter may affect the former, particularly in the initial stages of development.

However, if after taking account of interactions among different factors, the above framework is included in a growth model, the latter will be a greatly improved tool for economic strategy in long range development plans for a developing country. Given the necessary data, the relationships advanced in our model can be expressed in terms of mathematical equations. With the resulting matrix of coefficients and the application of simultaneous equation solutions (accounting for interactions), the complexity of which would depend on the date, projections of labour force dimensions and various sub-categories can be made.

Scope of the Study

Unfortunately, due to paucity of data, it is not possible to construct the above models for Pakistan and Bangladesh. However, a simple version determining only male and female aggregate labour force participations can be estimated. Multiple regression techniques are used to determine some of the more important social, economic, cultural and demographic factors within the framework suggested by Figure C-1.

What follows is a cross-sectional study based on the 1961 census data. The unit of observation is a "district." Male and female crude activity rates by district are taken as observations on the dependent variables of male and female aggregate labour force participation. Separate equations are also estimated using refined activity rates as dependent variables. Crude activity rate (*i.e.*, percentage of total population engaged in labour force) is independent of the size of population over districts. This measure is not, however, independent of the age structure of the population. It is easy to see that a district with a relatively favourable age structure (*i.e.*, relatively more persons in the working age span) *ceteris paribus* will report a larger activity rate. To avoid this bias, refined activity rate (*i.e.*, percentage of population ten years and over engaged in labour force) is also included as a dependent variable. Refined activity rate is a "true" rate in the sense that it refers to the population at risk of participating in economic or labour activity and hence is a better measure of labour force participation. However, the analysis in section three of chapter two found age reporting quite erroneous in younger age groups and that the crude rates were closer to their true rates than were the refined ones. But if age misreporting can be assumed to be fairly consistent across regions, the regional pattern of reported rates would be similar to that of true refined rates and will represent a relevant picture of regional variability. The best course is to use both rates as dependent variables.

Independent Variables and their Probable Influences on Labour Force Participation

Following is a list of measurable independent variables alongwith a discussion of *a priori* notions concerning their effects on propensities to participate in economic activity. These *a priori* notions are gathered from the findings of relevant

theoretical and empirical research. We have also depended on background knowledge of special features of the social, economic, and cultural setups in Pakistan and Bangladesh for inclusion of some of the following and for explanations of the results obtained.

The level of industrialization: This is measured in two ways: (1) percentage of male workers in non-agricultural sector, and (2) employees *i.e.*, wage earners or salaried workers) in non-agricultural sector as a percentage of total labour force.

It is now a well recognized fact that labour force participation (taking age structures of populations as constant) is lower in more industrialized economies than in less industrialized and agricultural ones. This is particularly true for male labour activity; mainly because of much larger labour force participation in younger and older age spans in the latter countries (Chapter Three). We, therefore, expect a negative association between the level of industrialization and male (and female) participation in economic activity.⁴

The degree of urbanization.—This is measured as the percentage of population living in urban areas. For both Pakistan and Bangladesh a negative relationship was observed between urbanization and activity rates (both male and female). Actually this variable may behave in a manner very similar to the industrialization variable and, in fact, these two variables may themselves be significantly correlated. Any such fixed relationship between independent variables is technically referred to as the “multicollinearity” problem. This problem is discussed in a later section.

Male (and female) industry mix index.—Based on the men (or women) to total employment ratio in each industry for the whole country and the industrial structure of the working labour force (*i.e.*, excluding unemployed) of the districts of the country, this index measures the percentage of jobs in a district expected to be held by men (or women).⁵

⁴ In this context, it would also be important to use the “level of real per capita income” by district. This variable measures the level and geographical variation in the economic achievement level. There may be, however, a close relationship between per capita income and the level of industrialization, and only one of the two variables may be sufficient. (We selected the latter as data on income at the district level are not available.) Due to data limitations, another important economic variable, namely “average earning level for workers” by district, could not be included. Earning level has substantial positive net effect upon the propensity to participate in economic activity.

⁵ The method of construction of the industry mix index for women, for example, is as follows:

Multiply the total employment in each industry in a district by the ratio of female to total employment in that respective industry for the country as a whole and sum over all the industries. This gives the expected number of female type jobs available in that district. The value of the female industry mix index is the percentage this expected number of jobs is of the total working labour force of the district. The value of the male industry mix index is 100 minus the female industry mix index. For more details on calculation of the industry mix index, see W.G. Bowen and T.A. Finegan, *The Economics of Labour Force Participation* (Princeton: Princeton University Press, 1969), pp. 772-74. For construction of the above industry mix indexes, total employment was distributed among 34 two and three digit industry groups using the industrial classification developed at the Population Studies Center, University of Pennsylvania. This classification seems to bring out the distinction between male dominated industries, *i.e.*, industries closed to women workers, and industries relatively open to them. For an outline of this, classification, see Table IV-1.

The concentration of women workers in a relatively few industries is a worldwide phenomenon; the nature of such a concentration varies among cultures. For example, in Pakistan and Bangladesh as in most other Muslim countries, there is marked antipathy to the employment of women in commerce. The same set of factors, leading to sex-segregated schooling and the medical treatment of women being limited to women medical practitioners, is responsible for large female employment in education and medical services. Textiles and personal services are the only other non-agricultural industries open to women workers. On the whole, women workers seem to be largely restricted to the agricultural sector (Section Two in Chapter Four). Hence, an industrial structure relatively favouring the above industries will generate more jobs for women and will lead to a relatively larger women work participation (and a relatively lower male labour activity). A recent very comprehensive study of one hundred "standard metropolitan statistical areas" (SMSAs) in the United States found the respective industry mix indexes as important explanatory variables for male and female labour force participations.⁶

However, since agriculture is the single most important source of employment (accounting for 60 percent of the total employment in Pakistan and 85 percent in Bangladesh), an industry mix index including agriculture may not reveal more than does the industrialization variable.⁷ (Correlation coefficients between the two variables are very high). A more appropriate variable may be the industry mix index excluding agriculture (*i.e.*, taking non-agricultural employment as 100).

Unemployment.—This is measured as the percentage of total labour force unemployed. Whereas the industry mix index measures the structural aspects of the economy of a region, which are directly related to the relative job opportunities for men (or women) and are of a long-run character, the overall unemployment rate measures job opportunities in general and more or less reflects the current state of local labour market conditions.

The "discouraged-worker" effect, *i.e.*, lack of job opportunities which deters a person from even looking for a job, is now a well recognized hypothesis. In the case of women, however, it is quite possible that with high overall unemployment, many of them may seek jobs to compensate for their unemployed husbands and/or other male family members. This is usually referred to as the "additional-worker" effect. If the latter effect is stronger than the discouraged-worker effect, there will be a positive association between unemployment and female labour force participation. Generally, however, unemployment is observed to have a negative net effect upon both male and female labour activity.

The level of educational attainment and schooling: A set of three variables is involved here: (1) percentages of males and females 10 years and over attending school, (2) percentages of males and females 10 years and over literate, and (3) percentages of males and females 15 years and over with education of eight grade and more and not in school.

⁶*Ibid.*, Chapters 4 and 6.

⁷Since the female share of total employment in agriculture is much larger than its share in the non-agricultural sector (16 versus 9 percent in Bangladesh and 10 versus 6 percent in Pakistan), the female industry mix variable ends up being negatively correlated to the industrialization variables. By the same token, industrialization is positively related to the male industry mix index.

The influence of the first variable is obvious. It is negatively related with activity rates—the persons attending school are generally supposed not to be engaged in economic activity. Our choice of the other two, literacy and high educational attainment, stems from a curvilinear form of relationship sometimes observed between the education variable and female activity rates. Sinha's findings for India show female work participation declining with literacy but increasing with female education above matriculation level (tenth grade).⁸ The probability of obtaining a job is usually higher for an educated person than for an illiterate one. Also he or she is more likely to have a job pleasant in nature, more durable and better paying. In other words, education increases the propensity to participate in economic activity. We expect a positive association between at least male work participation and variables (2) and (3).

Marital status.—*Ceteris paribus*, marital status influences both male and female participation in economic activity. A married man, usually head of a family, is more likely to be responsible for earning a living for his family than is an unmarried man. On the other hand, a married woman is less likely to be in the labour force than is an unmarried one for whom a job is often an economic necessity. Here, however, the attitude of the society may have an important bearing. In Pakistan and Bangladesh, for example, single women are not usually allowed to participate in labour activity, particularly if it involves working outside their homes.

The marital status variable is calculated separately for males and females (10 years and over), as percentage married.⁹

The geographical mobility of the population.—Two variables are considered here:

- (1) Immigration rate: This is measured as the percentage of immigrants in the total enumerated population of a district. Almost the entire immigration is from India. Very substantial in magnitude, this migration is of an involuntary type, though its spread across districts certainly may be economically motivated. Thus we hypothesize a positive relationship between labour force activity and immigration.
- (2) Net internal migration:¹⁰ Usually motivated by economic opportunity, this variable may be expected to be positively related to male work participation. The relationship with female labour activity may be different as most of the female migration in India, Pakistan and Bangladesh is associated with marriage (usually to the place of residence of the groom).

⁸ J.N. Sinha, "Dynamics of female participation in economic activity in a developing country," *U.N., World Population Conference, 1965, Vol. 4 (New York, 1967), p. 337.*

⁹ The very low age of 10 years is taken as the limit due to the fact that 22 percent of the females between the ages ten and fourteen were reported as married.

¹⁰ Using the census information of "place of birth" and "place of enumeration," net internal migration rate is computed as follows:

$$\text{Number of net internal migrants} = (P_{En} - P_b E_n) - (P_b - P_b E_n)$$

$$= I - O$$

P_{En} = total enumerated population of district born in Pakistan.

P_b = population born in district.

—Continued

The density of the population.—This is measured as population per square mile within a district. Given the importance of agriculture in a developing country, the higher the population pressure on the land (which may lead to out-migration), the lower the activity rate. The proper variable in this context may be the ratio of rural population to cultivable land area in square miles or acres, weighted by an index of land fertility and the average number of croppings per year. However, in the absence of data in these dimensions, we have used population density as the population pressure variable.

Percentage of nuclear families.—The 1961 census classifies a family as nuclear if it consists of husband and wife with or without offspring. The importance of the family composition variable in a developing socio-economic structure is made explicit by the usual argument that a greater prevalence of extended families and tribal systems allows persons to retire at an earlier age, as their dependency is readily shared by the other family members. However, it can be argued that if nuclear families are more prevalent among the higher socio-economic groups, which seems to be the case in Pakistan and Bangladesh, there is a greater probability of support for the older members and hence their terminating of employment¹⁰ and, similarly, a greater probability for the younger members to remain comparatively longer in school and out of labour activity. It appears that the family composition variable may only be an intermediate one in the sense that its effect on labour force participation reflects the influence of some primary factors.

The child-woman ratio.—Relevant for females only, it is computed as (children 0-4 years)/(women 15-49 years) x 1,000. This variable measures in rough terms the fertility level and the burden of child rearing. A negative association between the child-woman ratio and female work participation is an obvious hypothesis.

Some Problems Associated with a Cross-Sectional Single Equation Model

An important problem with a single equation model like the present one is its additive character. There may be significant interactions among independent

Contd.— $P_b E_n$ = population born and enumerated in district, i.e., non-migrants.
 I = number of in-migrants.
 O = number of out-migrants.

In the calculation of net in-migration rate, note that if reported population of a district is taken as the base then the following types of bias occur. In cases where there is substantial in-migration into a district, the base is inflated and the migration rate is deflated. The bias will be in the other direction if out-migration from the district has been substantial. To take care of this, we have used the following average base, suggested by Dr. Hope T. Eldridge:

$$\begin{aligned} \text{Average base} &= P_b E_n + \frac{1}{2}I + \frac{1}{2}O = P_b E_n + I - \frac{1}{2}I + \frac{1}{2}O \\ &= P_b E_n - \frac{1}{2}(I-O). \end{aligned}$$

So the formula for the net in migration rate is:

$$\frac{I-O}{P_b E_n - \frac{1}{2}(I-O)} \times 100.$$

¹¹ This point was suggested by Dr. Lee L. Bean.

variables which are not accounted for. As mentioned before, this is the multicollinearity problem. An extensive use of correlation co-efficient r matrices among the independent variables was made to gauge the degree of this problem and to establish reasonable statistical independence among the independent or exogenous variables. Highly intercorrelated exogenous variables (depending on their nature) were usually not used in the same equations. For example, urbanization and the two industrialization variables are highly intercorrelated (see Appendix Tables II and III). In this instance, parallel equations were run using industrialization and urbanization, and the one giving the better results was reported.¹²

Another problem is the ambiguous nature of certain exogenous variables, for example, family composition (nuclear or extended), marital status and migration variables with the latter two concerning only women. We do not know *a priori* the direction of their influences on labour activity. When any such variable is found to be significant, the explanation must include a whole set of other variables which may be affecting this variable. For example, as mentioned before, marriage is usually regarded as a deterrent factor to female work participation. But in the case of a traditional society it may just be the opposite; women may not be allowed to join the labour force until they are married.

A more general problem with single equation models is that many of the exogenous variables should really be endogenously explained, as was suggested in our case in Figure C-1. This implies a multi-equation model which, as we stated earlier, was not feasible here due to data limitations.

These limitations should be kept in mind in the discussion of the equations in the following section.

Cross-Section Results for Labour Force Participation

Tables C-1 to C-5 provide the parameters and test statistics for the regression equations explaining the male and female labour force participations in Pakistan and Bangladesh. Given are B parameters or regression coefficients alongwith their t ratios, which show their statistical significance; R^2 , the coefficient of determination, which measures the proportion of total variance of the labour force participation explained by the equation, and SE the standard error of estimate, which is a measure of the scatter of the actual values around the estimated regression line and hence provides a rough indication of the accuracy of the explanation. The unweighted average and the standard deviation of the two dependent variables are also reported.

The equations in the tables are selected from a rather larger number of alternative equations as those which best explain quantitatively the sensitivity of labour activity with respect to different factors.

Male Labour Force Participation Equation

Among the regression equations for Pakistan, we have included a set of

¹²It is important to note that one should not always rule out, *a priori*, any regression estimate containing two highly intercorrelated exogenous variables. The nature and specification of the variables should be carefully scrutinized. For a detailed discussion of the multicollinearity problem, see P. Rao and R.L. Miller, *Applied Econometrics* (Belmont: Wadsworth Publishing, 1971).

equations (Regression II) which exclude the Karachi district from the observations. With its very high degree of industrialization, urbanization, and education, Karachi is a rather extreme unit of observation. Exclusion of Karachi, does seem to give improved results.

In general, the results for male crude and refined activity rates (from here on referred to as MCAR and MRAR, respectively) in Tables C-1 and C-2 are consistent with our hypotheses. The education variable, "attending school" emerges as a very important variable for both countries. The marginal or net regression coefficient of MCAR with respect to this variable is -0.68 in Bangladesh and -0.44 in Pakistan (-0.52 including Karachi). This implies that MCAR will be lower by respectively a little less than seven-tenths and less than one-half of one percent in a

Table C-1

Multiple Regression Equations Explaining Male Crude Activity Rate (MCAR) in Pakistan (45 Districts) and in Bangladesh (17 Districts)

Independent variables	Pakistan				Bangladesh	
	Regression I		Regression II ^a		Regression I	
	β	<i>t</i>	β	<i>t</i>	β	<i>t</i>
Percent employees in labour force	-0.091	1.79*	-0.172	2.44*		
Male non-agriculture industry mix index	0.447	1.06	0.666	1.57+	0.322	1.51+
Density					-0.004	5.44**
Males attending school	-0.517	2.71**	-0.439	2.27*	-0.681	4.37**
Males with education of eighth grade and over					0.623	2.18*
Male immigration rate	0.158	3.50**	0.136	2.91**	0.361	2.79**
Male net in-migration rate	0.057	1.75*	0.055	1.71*		
Percent nuclear families	-0.214	3.21**	-0.198	3.00**	0.259	3.25**
Constant	26.619		6.095		19.696	
<i>R</i> ²	0.526		0.554		0.929	
<i>SE</i>	2.58		2.53		0.89	
Dependent variable (MCAR)						
Mean	54.65		54.60		56.55	
Standard deviation	3.44		3.47		2.56	

Note: *R*² in all the tables is adjusted *R*² for degrees of freedom.

^aExcluding Karachi district.

*Significant at the 5 percent level.

**Significant at the 1 percent level.

+Significant at the 10 percent level.

Bangladesh and a Pakistani district, which are "typical" in all other variables but have the proportion of males (10 years and over) attending school larger by one Percentage point than their respective all-district averages. And an increase of one percent in the proportion of males (15 years and over) with educational attainment of eight grade and more will inflate MCAR by a little more than six-tenths of one percent in an otherwise typical Bangladeshi district. However, the latter education variable is not statistically very powerful ($t = 2.18$) and is not an important explanatory variable in the case of Pakistan. Here, the effects on MCAR are brought primarily through their influence on a limited range of ages. The school attendance variable affects only the specific activity rates of the younger age span. It is likely that a similar age span would show sensitivity to the other education variable, "percentage of males age fifteen and over with education of eighth grade or more." This shows, as mentioned before, the necessity of separately estimating equations for sex-age sub-groups.

Table C-2

Multiple Regression Equations Explaining Male Refined Activity Rate (MRAR) in Pakistan (45 Districts) and in Bangladesh (17 Districts) §

	Pakistan				Bangladesh	
	Regression I		Regression II ^a		Regression I	
	β	t	β	t	β	t
Urbanization	-0.163	3.64**	-0.251	4.69**	-0.356	2.63*
Male non-agriculture industry mix index	0.496	1.09	0.581	1.44+		
Density					-0.002	1.65+
Males attending school	-0.848	3.58**	-0.719	3.18**	-0.905	3.34**
Males with education of eighth grade and over					0.834	1.34
Male immigration rate	0.170	2.84**	0.157	2.78**	0.459	2.42*
Male net in-migration rate	0.092	2.28*	0.090	2.41*		
Percent male married					0.451	2.94**
Percent nuclear families	-0.178	2.21*	-0.162	2.15*	0.196	1.84*
Constant	50.434		42.505		54.955	
R^2	0.648		0.701		0.870	
SE	3.12		2.91		1.32	
Dependent variable (MRAR)						
Mean	81.36		81.44		87.71	
Standard deviation	4.84		4.87		2.66	

§Same footnote as in Table C-1.

An interesting though not surprising result is that "population density" is the statistically most powerful variable ($t = 5.44$) in Bangladesh. In contrast to Pakistan, the districts in Bangladesh are quite homogeneous in terms of the geographical distribution of the population. With agriculture being almost the sole source of livelihood and with a very high density of population (among the highest in the world), this variable does seem to be an approximation of population pressure. Density is almost independent of urbanization (correlation coefficient, r , is only 0.21; Appendix Table III) and is not reflecting the effect of the latter. (Such is not the case in Pakistan, where $r = 0.71$ between the two variables; Appendix Table II). With a regression coefficient of only -0.004 , however, only substantial changes in density influence the activity rate.

Male non-agriculture industry mix index, though only statistically significant at the 10 percent level, does have substantial impact on MCAR, particularly in Pakistan. A one percentage point difference in the value of this index among otherwise similar districts in Pakistan results, on the average, in a difference of two-thirds of a percent in MCAR. It is important to note that the industry mix variable also enters into the MRAR equation and the female activity rate equations for Pakistan (though again it is not statistically very significant), but not into the corresponding equations for Bangladesh. This signifies that, with the present rapid industrialization of already semi-industrialized Pakistan, the accompanying structural changes (changing the industry mix) are altering the relative levels of male and female propensities to participate in economic activity, while in agrarian Bangladesh, the industry mix variable does not seem to be important.

The only perplexing variable and one worth an explanation is the family composition variable, "percent nuclear families," which appears with regression coefficients of opposite signs in the two countries and with high statistical significance. In a Bangladeshi district, otherwise alike to all other districts, a one percent increase in the proportion of nuclear families will inflate MCAR by more than one-fourth of a point, but the same conditions would contract MCAR by one-fifth of a point in a Pakistani district. As mentioned before, the relationship between this variable and work participation may not be a direct one. Probing into the correlation coefficient matrices in Appendix Tables II and III, we find a set of determinants of labour activity correlated in turn with the family composition variable in opposite directions in the two provinces. For example, "percent nuclear families" is negatively correlated with "urbanization" and "industrialization" in Bangladesh. It has been observed that non-agricultural activity in Bangladesh is relatively traditional and that there is greater scope for extended-family-operated industries. On the other hand, in Pakistan there is a positive relationship between "percent nuclear families" and "urbanization" and "industrialization," which in turn are negatively correlated with the activity rate. Similarly, there are inverse relationships and different sizes of correlation coefficients of this variable with "literacy," "immigration," etc., in the two countries. In the case of females, the observations are similar to those for males in their respective country. All this suggests that the family composition variable is really portraying the influence on the propensity to participate in labour activity of a set of variables, which are inversely related with this variable itself in the two countries, and that it has different economic and social roles to play in these areas.

Table C-2 provides regression fits for MRAR.¹³ There are some differences between these equations and the equations of Table C-1. "Urbanization," not an important determinant of MCAR, is picked up as an important variable in the MRAR equation for Bangladesh. And in the corresponding equation for Pakistan, it emerges as statistically most significant ($t = 4.69$) and replaces the industrialization variable "percent employees in labour force"—a determinant of MCAR. ("Urbanization" and "percent employees in labour force" are, however, highly inter-correlated, $r = 0.87$). The school attendance variable remains important and highly significant in both countries. The regression coefficients with respect to this variable are much higher in the MRAR equations than those observed for MCAR. The reason is statistical—now the dimensions of both dependent and independent variables are the same (males 10 years and over) and the extra population of persons under 10 years which was included in crude activity rates is excluded.

In Bangladesh, family composition, high educational attainment and density, important determinants of MCAR, are statistically not very significant for MRAR (particularly "males with education of eighth grade and over," which is significant only at the 15 percent level).

Finally, a brief note on the impact of migration (immigration and net internal migration) on male labour activity. Statistically significant in both countries, immigration, which has been quite substantial in magnitude, seems to carry a larger impact on labour force participation in Bangladesh. (Net regression coefficients are, respectively, 0.36 and 0.46 for MCAR and MRAR. Corresponding coefficients in the case of Pakistan are 0.14 and 0.16). Part of the explanation may be that immigration to Pakistan has been more involuntary in nature than that to Bangladesh and hence has not, perhaps, significantly altered the age structure and/or the age-specific propensity to participate in economic activity. We have, however, no relevant statistics with which to prove this empirically. Another factor may be that relatively more immigrants in Pakistan settle in urban areas. This is substantiated by a high simple correlation found in Pakistan between the immigration rate and urbanization ($r = 0.60$ compared to only 0.18 in Bangladesh). And, since the propensity to participate in labour activity is lower in urban areas, much of the immigration to Pakistan may not have a positive influence on labour activity. On the other hand, internal migration seems to be relevant only in Pakistan. This is not surprising. Whereas Bangladesh has remained more or less a homogeneous, predominately agrarian area, Pakistan has been experiencing rapid economic growth and industrialization with the result that certain geographical regions have been developing much faster than others and hence offer better job opportunities. Such regions have been attracting substantial migration from relatively depressed areas. These migrants are usually in the prime adult age span with high propensity to participate in economic activity. A one percentage point increase or decrease in "net in-migration rate" (*i.e.*, in-migration minus out-migration) to a typical district in Pakistan will cause, on the average, an increase or decrease of one-tenth of a percent in its MRAR (and a little more than one-twentieth of a percent in its MCAR).

Overall, seen in terms of both the proportion of total variance explained and

¹³ Note that by excluding Karachi a better equation (Regression II) is obtained for Pakistan. R^2 is improved by 5.3 percentage points and SE is reduced.

the standard error of the estimate, we have obtained very good fits for crude and refined participation rates, particularly for Bangladesh.

Female Labour Force Participation Equations

A correlation coefficient of 1.0 between female crude activity rate (FCAR) and female refined activity rate (FRAR) makes them perfect substitutes for each other. Hence, we expect the same set of explanatory variables with similar *t*-ratios; the only difference being higher values of the β 's for FRAR, which by definition is of larger dimension. For general reference, regression equations for both FCAR and FRAR are provided. Because of the different sets of determinants of female work participation and of the converse roles of some factors operating within the two countries, we will discuss the results for each separately.

Tables C-3 and C-4 give respectively FCAR and FRAR equations for Pakistan. It is important to note that, in comparison to males, the range of female activity rates across districts is very wide, part of which is probably due to reporting biases. There are five districts which reported relatively very high female activity rates.¹⁴ Appendix Table I provides equations including these five districts. *SE* for these equations are about twice as large as those for the corresponding equations in Tables C-3 and C-4.¹⁵

Besides these five districts, the equations were also estimated excluding Karachi district. This does not improve the equations, and either of the regression sets, including or excluding Karachi, can be used. However, with only a little more than two-fifths of the total variance explained by the equations and still very high *SE* (2.41 and 3.79 for FCAR and FRAR respectively in Regressions I), particularly given the low mean values of FCAR and FRAR, the value of these results is limited. Possibly, the results might be improved by considering some other variables. The trouble, however, may not be that we have too few independent variables (or not the right ones), but, as shown in the main study, that the measurement of the dependent variables (or not the right ones), but, as shown in the main study, that the measurement of the dependent variable itself is poor (Section Four in Chapter two).

¹⁴ These five districts with their respective FCAR and FRAR are as follows:

	FCAR	FRAR
Kohat	14.40	22.64
Tharparkar	15.43	22.63
Campbellpur	17.29	25.17
Larkana	18.11	26.92
Jaccobabad	26.95	41.94

¹⁵ Also the parameters of the equations in Appendix Table I with respect to female literacy, industry mix and industrialization variables (Regressions I) show that including industry mix gives too large a net regression coefficient for this variable (1.58 for FCAR and 2.32 for FRAR) and makes industrialization and female literacy statistically insignificant. Exclusion of non-agricultural industry mix index improves the equations (Regressions II), but with a very high correlation between this variable and "female literacy rate" ($r = 0.77$; note that this is reduced to 0.02 when these five districts are excluded; see Appendix Table IV), the regression coefficient with respect to the latter variable becomes too large (0.74 for FCAR and 1.07 for FRAR).

Table C-3
Multiple Regression Equations Explaining Female Crude Activity Rate (FCAR) in Pakistan (40 Districts)

Independent Variables	Regression Ia		Regression IIa		Regression IIIb		Regression IVb	
	β	<i>t</i>	β	<i>t</i>	β	<i>t</i>	β	<i>t</i>
Percent employees in labour force	-0.168	2.11*	-0.238	4.06**	-0.174	2.03*	-0.244	3.78**
Female non-agriculture industry mix index	0.584	1.30§			0.528	1.21		
Female literacy rate	0.385	2.21*	0.522	3.74**	0.385	2.14*	0.515	3.55**
Female immigration rate	-0.090	1.60§	-0.102	1.84*	-0.093	1.62§	-0.104	1.82*
Percent females married	0.122	2.50**	0.156	3.76**	0.125	2.56**	0.156	3.70**
Percent nuclear families	-0.120	1.98*	-0.088	1.58§	-0.117	1.87*	-0.068	1.50§
<i>R</i> ^a	0.430		0.402		0.424		0.398	
<i>SE</i>	2.41		2.43		2.45		2.46	
Dependent variable (FCAR)								
Mean	4.75				4.79			
Standard deviation	2.94				2.97			

^aExcluding five districts with extremely high FCAR.

^bExcluding Karachi district and five districts with extremely high FCAR.

Table C-4

Multiple Regression Equations Explaining Female Refined Activity Rate (FRAR) in Pakistan (40 Districts)

Independent Variables	Regression Ia		Regression II ^a		Regression III ^b		Regression IV ^b	
	β	<i>t</i>	β	<i>t</i>	β	<i>t</i>	β	<i>t</i>
Percent employees in labour force	-0.251	2.01*	-0.356	3.87**	-0.268	1.99*	-0.370	3.67**
Female non-agriculture industry mix index	0.869	1.23			0.784	1.14		
Female literacy rate	0.558	2.04*	0.761	3.48**	0.551	1.95*	0.743	3.28**
Female immigration rate	-0.132	1.50§	-0.151	1.73*	-0.140	1.55§	-0.156	1.74*
Percent females married	0.198	2.59**	0.248	3.82**	0.203	2.64**	0.248	3.77**
Percent nuclear families	-0.193	2.04*	-0.146	1.67§	-0.187	1.90*	-0.140	1.56§
<i>R</i> ²	0.419		0.393		0.414		0.391	
<i>SE</i>	3.79		3.81		3.84		3.86	
Dependent variable (FRAR)								
Mean	7.29				7.36			
Standard deviation	4.58				4.62			

^aExcluding five districts with extremely high FRAR.

^bExcluding Karachi district and five districts with extremely high FRAR.

In regression sets II and IV the variables "percent employees in the labour force," and "female literacy rate" are highly significant but their coefficients are very large, especially for the latter. This seems to indicate, alongwith low R^2 , a missing variable problem. The inclusion of the industry mix variable does seem to improve the equations (Regression sets I and III). Coefficients for the above two variables are reduced to more reasonable size and R^2 is slightly improved. Both literacy and industry mix variables have a positive influence on the female propensity to participate in economic activity (with industry mix variable significant only at the 10 percent level, as was the case in the equations for males). The industrialization variable, as expected, enters with a negative coefficient. Statistically, the most significant determinant of female labour activity is, however, "percent females married." This finding is unexpected but not hard to explain. In rural areas it is a common observation that unmarried women are usually inhibited from working in the field. Such may not be the case for married women—they may be relatively free to share the farm work. (This reasoning does not apply to industrial and urban areas). This factor also seems to be responsible for a higher female labour activity in rural areas than in urban ones. The family composition variable is also important and works in the same direction as for males in Pakistan. The negative marginal coefficients of the activity rates with respect to "female immigration rate" justify our suspicion that migration and its spread are not economically motivated for females, at least in the case of Pakistan.

In the case of Bangladesh, we are confronted with the very difficult problem of an extreme divergence of activity rates across districts. Using the "range of variation" as a criterion, the seventeen districts can easily be bifurcated into eleven districts with an activity rate range of 1.0 to 6.0 percent and six districts with a range of 16.3 to 46.8 percent.¹⁶ Obviously the inclusion of this group of six districts will be statistically incorrect. In Table C-5 we have given the equations for FCAR and FRAR based on the observations of only the first group of eleven districts. Of course, the coefficients of these equations should only be used in the context of these eleven districts and not of the country as a whole.

For these districts, a very high correlation was found between "percent nuclear families" and "percent females married" ($r = 0.79$) and, *a priori*, we could not decide which one was a more important variable. So in Table C-5, Regressions I includes the former variable and Regressions II, the latter. Both these exogenous variables emerge as significant in their respective equations. However, it seems that the marital status variable pulls down the value of the other variables as well as R^2 and slightly increases the *SE*.

As expected, in comparison to Pakistan, there is a somewhat different set of explanatory variables for female labour force participation in Bangladesh. The equations have substantial, positive and statistically significant parameters for both

¹⁶ Five of these six districts constitute Chittagong division and the sixth district is Mymensingh in Dacca division. Assam State in India borders with all these six districts and seems to carry the influence of its high female labour participation across the border. It was observed that most of the simple correlation coefficients between female labour activity and the independent variables were of opposite signs and/or were of very different sizes when these six districts were included in the province. This implies that different factors are operating in these districts, perhaps making them more homogenous with Assam State in India than with the rest of the districts in Bangladesh.

Table C-5

Multiple Regression Equations Explaining Female Crude Activity Rate (FCAR) and Female Refined Activity Rate (FRAR) in Bangladesh (11 Districts)

Independent Variables	FCAR				FRAR			
	Regression I		Regression II		Regression I		Regression II	
	β	<i>t</i>	β	<i>t</i>	β	<i>t</i>	β	<i>t</i>
Child-woman ratio	-0.006	1.87§	-0.007	1.62§	-0.010	1.84§	-0.011	1.59§
Female immigration rate	0.322	2.74*	0.313	2.42*	0.534	2.75*	0.505	2.44*
Female net in-migration rate	0.238	2.26*	0.215	1.85§	0.377	2.24*	0.340	1.83§
Percent females married			0.108	1.97*			0.171	1.95*
Percent nuclear families	0.136	2.34*			0.216	2.31*		
<i>R</i> ^a	0.776		0.744		0.775		0.742	
<i>SE</i>	0.80		0.86		1.29		1.38	
Dependent variable								
Mean	2.31				3.75			
Standard deviation	1.35				2.16			

migration variables alongwith the family composition variable—a phenomenon similar to that which was found in the case of Bangladeshi males, but quite different to that which is observed for females in Pakistan. The fertility variable, “child woman ratio” (not a significant determinant of female labour force participation in Pakistan) enters with the expected negative sign, though it is significant only at the 10 percent level.

Conclusion

The above model has academic value as an explanation of the regional patterns of economic activity and intermediate practical value for policy guidelines. We have been able to obtain good fits for male labour force participation in both countries.¹⁷ The immediate usefulness of the results obtained here is their capacity to point out ways of making improvements. Such equations, improved in line with the theoretical model suggested earlier, are necessary in order to project labour force at different points in time.

We must admit the inadequacy of our results for female labour force participation. The situation can best be improved by better measurement of female labour activity, now admitted to be very poor. The equations for Pakistan are somewhat encouraging in the sense that we were able to get a set of statistically significant parameters for female work participation, particularly with respect to industrialization, industry mix, education and marital status. These variables, though they leave a large unexplained variance, are meaningful in terms of policy implications. The situation is quite different in the case of Bangladesh. We obtained good statistical fit in terms of variance explained but the variables included such as migration and family composition are likely to be only intermediate variables and are not very suitable for policy applications. So here the need is to improve both the type of explanatory variables included and the quality of reporting of economic activity.

¹⁷ These are encouraging results considering that we expect lower R^2 from cross-section data than from time series as there is no time trend factor present in the former.

Appendix Table I

Multiple Regression Equations Explaining Female Crude Activity Rate (FCAR) and Female Refined Activity Rate (FRAR) in Pakistan (45 Districts)

Independent Variables	FCAR				FRAR			
	Regression I		Regression II		Regression I		Regression II	
	β	t	β	t	β	t	β	t
Percent employees in labour force	-0.116	0.80	-0.321	2.96**	-0.173	0.78	-0.474	2.87**
Female non-agriculture industry mix index	1.584	2.05*			2.322	1.96§		
Female literacy rate	0.332	1.05	0.737	2.86**	0.479	0.99	1.074	2.74**
Female immigration rate	-0.158	1.56§	-0.207	2.03*	-0.234	1.52§	-0.307	1.98*
Percent females married	0.186	2.28*	0.283	4.07**	0.300	2.40*	0.442	4.18**
Percent nuclear families	-0.299	2.97**	-0.214	2.25*	-0.463	3.02**	-0.339	2.34*
R^2	0.403		0.339		0.402		0.342	
SE	4.42		4.60		6.76		7.00	
Dependent variable								
Mean	6.27				9.58			
Standard deviation	5.33				8.14			

*Significant at the 5 percent level.

**Significant at the 1 percent level.

§Significant at the 10 percent level.

Appendix Table II

Matrix of Correlation Coefficients (r) Among Activity Rates and Selected Socio-Economic and Demographic Variables for Males in Pakistan (45 Districts)

	MCAR	MRAR	MLFNA	TEMPL	URBAN	DENST	NUCLE	MASCH	MLITE	M8YSC	MIMM	MNINM	MMAR	UNEMP	MTMIX	MNAMIX
MRAR	.82															
MLFNA	-.17	-.53														
TEMPL	-.17	-.45	.85													
URBAN	-.15	-.48	.90	.87												
DENST	.01	-.27	.74	.51	.71											
NUCLE	-.36	-.22	.13	.08	.06	.02										
MASCH	-.36	-.63	.60	.35	.49	.65	-.08									
MLITE	-.26	-.64	.74	.55	.66	.64	-.23	.92								
M8YSC	-.29	-.60	.87	.74	.82	.71	-.02	.81	.89							
MIMM	.22	-.10	.62	.39	.60	.71	.04	.37	.43	.49						
MNINM	.37	.31	.07	.18	.21	.09	-.09	-.17	-.08	.05	.19					
MMAR	.00	.29	-.62	-.50	-.49	-.55	.06	-.61	-.60	-.67	-.40	-.03				
UNEMP	-.37	-.49	.52	.38	.41	.51	.02	.76	.72	.72	.14	-.09	-.43			
MTMIX	-.09	-.37	.88	.91	.82	.53	.14	.32	.50	.70	.49	.13	-.58	.25		
MNAMIX	.15	.17	.19	.42	.17	-.10	-.02	-.24	-.13	.05	-.03	.16	-.27	-.21	.58	
MMIX-K ^a	.16	.07	.49	.73	.54	.24	-.02	-.05	.12	.34	.23	.25	-.37	.05	.76	.83

^aMMIX-K is male non-agriculture industry mix index calculated excluding Karachi district.
 Note: The variables in order of appearance are:

MCAR=Male crude activity rate.
 MRAR=Male refined activity rate.
 MLFNA=Percent male workers in non-agricultural sector.
 TEMPL=Employees in non-agricultural sector as a percentage of total labour force.
 URBAN=Percent population living in urban areas.
 DENST=Number of persons per square mile.
 NUCLE=Percent nuclear families.
 MASCH=Percent males (ten years and over) attending school.

MLITE=Percent males (ten years and over) literate.
 M8YSC=Percent males (fifteen years and over) with education of eighth grade and more and not in school.
 MIMM=Male immigration rate.
 MNINM=Male net in-migration rate.
 MMAR=Percent males (ten years and over) married.
 UNEMP=Percent of total labour force unemployed.
 MTMIX=Male industry mix index.
 MNAMIX=Male non-agriculture industry mix index.

Appendix Table III

Matrix of Correlation Coefficients (r) Among Activity Rates and Selected Socio-Economic and Demographic Variables for Males in Bangladesh (17 Districts)

	MCAR	MRAR	MLFNA	TEMPL	URBAN	DENST	NUCLE	MASCH	MLITE	M8YSC	MIMM	MNINM	MMAR	UNEMP	MTMIX
MRAR	.68														
MLFNA	-.17	-.66													
TEMPL	-.09	-.62	.96												
URBAN	-.03	-.48	.93	.95											
DENST	-.75	-.42	.21	.17	.21										
NUCLE	.13	.19	-.22	-.19	-.10	.32									
MASCH	-.71	-.53	-.03	.02	-.10	.42	-.02								
MLITE	-.32	-.46	.10	.24	.15	.21	.10	.77							
M8YSC	-.43	-.68	.57	.61	.50	.49	-.03	.52	-.56						
MIMM	.28	.34	.11	.12	.18	-.21	-.23	-.14	-.17	-.25					
MNINM	.79	.28	.17	.25	.32	-.69	-.16	-.62	-.22	-.27	.27				
MMAR	-.01	.57	-.63	-.62	-.43	.09	.12	.04	-.14	-.48	.15	-.14			
UNEMP	-.43	-.67	.67	.68	.49	.25	-.16	.45	.33	.60	.09	-.29	-.62		
MTMIX	-.09	-.63	.96	.98	.94	.14	-.27	.00	.21	.50	.07	.30	-.62	.60	
MNAMIX	.50	.25	-.29	-.13	-.16	-.33	.32	-.29	.05	-.16	-.36	.49	-.10	-.31	-.09

Appendix Table IV

Matrix of Correlation Coefficients (r) Among Activity Rates and Selected Socio-Economic and Demographic Variables for Females in Pakistan (40 Districts)^a

	FCAR	FRAR	MLFNA	TEMPL	URBAN	DENST	NUCLE	FASCH	FLITE	F8YSC	FIMM	FNINM	FMAR	CHILD	UNEMP	FTMIX	FNAMIX
FRAR	1.00																
MLFNA	-.17	-.20															
TEMPL	-.32	-.33	.85														
URBAN	-.18	-.19	.90	.86													
DENST	-.09	-.12	.74	.50	.70												
NUCLE	-.28	-.27	.06	.04	.04	-.01											
FASCH	-.00	-.03	.88	.72	.86	.83	-.04										
FLITE	-.01	-.04	.90	.76	.89	.82	-.08	.98									
F8YSC	-.11	-.12	.89	.85	.93	.78	-.01	.95	.96								
FIMM	-.06	-.08	.62	.37	.60	.72	-.02	.64	.69	.64							
FNINM	.10	.10	.10	.11	.19	.14	.02	.12	.13	.13	.18						
FMAR	.20	.24	-.59	-.34	-.41	-.63	-.04	-.56	-.53	-.46	-.39	.10					
CHILD	-.01	.05	-.32	-.09	-.25	-.40	.10	-.47	-.46	-.32	-.35	-.04	.47				
UNEMP	.32	.29	.52	.39	.42	.52	-.04	.64	.60	.54	.15	.05	-.52	-.31			
FTMIX	.39	.40	-.88	-.91	-.83	-.52	-.07	-.69	-.71	-.79	-.46	-.04	.43	.09	-.25		
FNAMIX	.46	.45	-.15	-.40	-.14	.14	.06	-.00	.02	-.12	.10	.10	-.00	-.24	.22	.55	
FMIX-K ^b	.40	.39	-.48	-.73	-.53	-.22	.05	-.37	-.41	-.55	-.21	-.01	.11	-.14	-.06	.76	.82

^aThe five districts excluded are Kohat, Tharparkar, Campbellpur, Larkana and Jacobabad.

Note: New variables in order of appearance are:

FCAR=Female crude activity rate.

FRAR=Female refined activity rate.

FASCH=Percent females (ten years and over) attending school.

FLITE=Percent females (ten years and over) literate.

F8YSC=Percent females (fifteen years and over) with education of eighth grade.

^bFMIX-K is female non-agriculture industry mix index calculated excluding Karachi district and over and net in school.

FIMM=Female immigration rate.

FNINM=Female net in-migration rate.

FMAR=Percent females (ten years and over) married.

CHILD=Child-woman ratio.

FTMIX=Female industry mix index.

FNAMIX=Female non-agriculture industry mix index.

Appendix Table V

Matrix of Correlation Coefficients (r) Among Activity Rates and Selected Socio-Economic and Demographic Variables for Females in Bangladesh (11 Districts)^a

	FCAR	FRAR	MLFNA	TEMPL	URBAN	DENST	NUCLE	FASCH	FLITE	F8YSC	FIMM	FNINM	FMAR	CHILD	UNEMP	FTMIX	FNAMIX
FRAR	1.00																
MLFNA	-.10	-.10															
TEMPL	.05	.06	.94														
URBAN	.11	.11	.92	.97													
DENST	-.30	.30	.59	.57	.59												
NUCLE	.29	.30	-.20	-.13	-.03	.23											
FASCH	-.58	-.59	.40	.28	.27	.20	-.13										
FLITE	-.36	-.37	.43	.47	.39	.14	-.16	.80									
F8YSC	-.11	-.10	.75	.68	.79	.54	.13	.58	.34								
FIMM	.65	.65	.05	.08	.07	-.33	.03	-.51	-.47	-.03							
FNINM	.66	.65	-.35	-.18	-.16	-.43	-.07	-.56	-.31	-.38	.33						
FMAR	.37	.37	-.46	-.32	-.21	-.14	-.79	-.43	-.46	-.06	.27	.14					
CHILD	-.40	-.38	.28	.04	.04	.23	-.45	-.02	-.30	.20	.15	-.30	-.23				
UNEMP	-.07	-.07	.76	.66	.59	.11	-.43	.24	.24	.50	.47	-.31	-.31	.49			
FTMIX	.05	.05	-.94	-.97	-.94	-.63	.22	-.38	-.54	-.68	.07	.16	.48	-.06	-.57		
FNAMIX	-.17	-.18	.57	.35	.30	.07	-.37	.35	.13	.41	.27	-.53	-.28	.45	.78	-.29	

^aThe six districts excluded are Mymensingh, Sylhet, Comilla, Noakhali, Chittagong and Chittagong Hill Tracts.

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