OCCUPATIONAL STRUCTURE AND LEVELS OF ECONOMIC DEVELOPMENT :
A COMPARATIVE STUDY OF DEVELOPED AND LESS DEVELOPED DISTRICTS IN KARNATAKA AND PUNJAB

A DISSERTATION SUBMITTED TO THE JAWAHARLAL NEHRU UNIVERSITY
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MASTER OF POPULATION STUDIES

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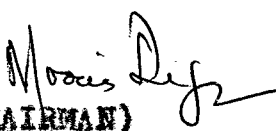
Certified that the dissertation entitled
"Occupational Structure and Levels of Economic
Development: A Comparative Study of Developed
and Less Developed Districts in Karnataka and
Punjab" submitted by Mr. C. Sai Kumar is in
partial fulfilment of six credits out of a total
requirement of thirty credits for the degree of
Master of Population Studies of this University.
This dissertation has not been submitted for
any other degree of this University or elsewhere
and it is his own work.

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

(CHAIRMAN)

(SUPERVISOR)

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CHAPTER 1

INTRODUCTION

The sum total of goods and services produced by
an economy is national product. For growth of the economy,
wealth of natural resources is relevant. Wealth of human
resources is more relevant too. Labour force which is
part of human resources of an economy plays a pivotal role
in the growth of an economy directly. The quality of human
resources and the quality of labour force are inseparable.

Until recently it is widely believed that given a
sufficient volume of capital investment, a required tempo
of economic growth can be achieved. The failure of some
countries well endowed with natural resources and capital
investment to achieve a satisfactory rate of growth has
prompted economists to take a careful look at human organi-
sation. The then Director General International Labour
Organization in his Report to the 1963 International Labour
Conference at Geneva said "...it is now beginning to be
realised that skills and effective utilisation of labour
force may, in addition to the physical capital and natural
resources, be a more decisive factor for economic expansion
than was hitherto assumed".[1]

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1. ILO, Report of the Director General: Programme and
    Structure of the ILO, Report I, International Labour
    Conference, 47th Session, Geneva 1963, p. 33.

A lot of work has been done on economic development during the last two decades in India. Despite the considerable volume of literature on economic development, little systematic work has been done on the quality of labour force as a factor in promotion of economic development.[2] Very few people have tried to correlate the occupations of workers to economic development. To what extent various levels of skilled occupations have been explaining the development of a region is going to be examined in the present study. This in fact is the main aim of the present study.

Occupation in this study means the census occupation. According to the Census of India 1961, occupation of a worker is the 'function which he (worker) personally performs by engaging himself in any branch of economic activity which is called his industry'.

Review of Literature

Occupation of workers and their economic implications on regional development are somehow not a very common topic with social scientists or researchers. One can distinguish between the work done on economic development and work force

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2.   Water Galenson and Graham Pyatt, The Qualities of Labour and Economic Development in Certain Countries: A Preliminary Study, ILO, Geneva, 1964, p. 1.

from the work done on economic development and various skill level occupations. In the work force studies, work force is inclusive of all occupations of different levels of skills whereas in the occupational studies a further disaggregation at the various levels of skills of the work force are more important than the size of the work force or its industrial structure.

Until recently socioligists seem to be more interested in the study of occupations. Sociologists mostly dealt with occupational mobility both horizontal and vertical. Occupational attainments of people over generations termed as 'intergenerational occupational mobility' is also often dealt with by sociologists. In one such study, N.K. Nijhawan[3] finds that children of professional or white coller workers have got the highest intergenerational occupational mobility while the children of agricultural workers have got the least intergenerational occupational mobility. Studying the impact of education on occupational mobility, S. Jutley[4] pointed out that education increases the occupational mobility.

3.   N.K. Nijhawan, "Intergenerational Occupational Mobility", Economic and Political Weekly, 27 September 1969, pp. 1553-57.

4.   S. Jutley, "Education and Occupational Mobility in a U.P. village", E.P.W., 26 April 1969, p. 725.

Treating occupations as social status indicators, O.P. Desai[5] says that a man can change his social relationships while continuing the same activity. It is equally true that a man can change his activity and continue to have the same social relations.

J.S. Gulati,[6] a sociologist, takes a wide range of factors like political, socio-economic and educational in explaining the changing occupational pattern over-time. He attributes all the rapid changes in the occupations to the 'employee culture' meaning that most of the workers aspire for the highly paid government jobs. Some of the authors have gone a step further and studied one or a few specific occupations. A majority of such studies belong to 'Medical Sociology'.[7]

The first and so far the most analytical work in this field on India was done by Dr Joesph B. Schwartzberg[8] for his

5. O.P. Desai, "Understanding Occupational Change in India", E.P.W., 29 May 1971, pp. 1094-98.

6. J.S. Gulati, Changing Occupational Patterns, National Council of Educational Research and Training, New Delhi.

7. Bill Richards, "New Data on Asbestos indicate cover up of effects on Workers". Bary Craig, "My Life's Cut Short", says Asbestos Wonler, Indian Journal of Occupational Health, Vol. XXII, No. 1, and many other studies in this field.

8. Dr Joseph E. Schwartzberg, Occupational Structure and Levels of Economic Development in India: A Regional Analysis, Monograph No. 4, Census of India, 1961, New Delhi.

doctoral thesis. He has done a detailed region-wise analysis
for the whole of India and found the correlation of various
occupations with the level of economic development. But
the 'Occupations' which Dr Schwartzberg dealt with are not
the 'occupations' in the present sense of the term.[9] His
'occupations' are infact livelihood classifications, a
mixture of occupational and industrial categories. He took
three sets of indicators for determining the level of
economic development in a region. After a detailed region-
wise analysis he correlated the occupational structure with
economic development. He says, "The variables concerned
with... the extent of non-agricultural occupations within
the village are particularly significant (for economic
development), while (those) concerned with non-agricultural
occupations outside the village are not."[10] As the wealth
of a village community increases, its demand for a greater
varieties and volume of non-agricultural goods and services
increases, thereby permitting a greater number of non-
agricultural workers to be employed within a village.

K.L. Kohli[11] in his study tried to bring out the

9.   For the first time the term 'occupation' was clearly
      defined in 1961 census. It says occupation of a worker
      is the function which he personally performs by
      engaging himself in any branch of economic activity
      which is called his industry. The concept of occupa-
      tion is thus distinct from that of Industry..." Although
      occupation and industry are different. Certain occu-
      pations are normally found to exist in only one industry.
      But a greater number of occupations are found to exist
      in several industries".

10.   Dr J.E. Schwartzberg, op. cit., p. 214.

11.   K.L. Kohli, "Regional Variations of Occupational Struct-

regional variations in the occupational structure. He
tried to find out the concentration of various occupations
with the help of concentration index. He also tried to
find sex differentiation in various occupations. His
findings indicate that females are relatively over represented
in the traditional occupations particularly in those in
which typical enterprise is household or small scale
industry rather than in the more modern large scale enter-
prises. He further regroups the occupational data into
4 major categories to make international comparisons
possible. In this exercise he finds that Indian white
collar workers constitute only 10.6% against 32.8% in USA
and 29.3% in Japan in 1960.

Raghav Gaiha[12] in his article makes an attempt to
examine the response of major occupations to selected
economic variables, with the help of cross-section data
and suggests a basis for predicting changes in the occupa-
tional structure. He finds that "...output and capital
intensity variables determine the utilization of Administra-
tive, Executive and Managerial workers, Sales Workers,
Farmers, Fishermen, Hunters, Loggers...".

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12.   Gaiha, Raghav, "Occupational Structure of Employment in
       India: A Cross Section Analysis", Demography India,
       December 1973, Vol. II, No. 2.

Besides these, very little work has been done on this aspect. The impact of various levels of skills of labour force on the overall economic development of a region is not a widely explored area of research. This necessitates a study which should take all these points into consideration. This present study is only an attempt to bridge this gap as far as possible.

Sources of Data

The data on occupations are available only from two published sources. The first is the Registrar General of India, Census, Ministry of Home Affairs. The second, is the Directorate General of Employment and Training (Referred here onwards as DGE&T), Ministry of Labour. DGE&T brings annual reports on the occupational and educational structures of labour-force for public sector and private sector separately and alternately. The main drawbacks of this data are:

(a)   In private sector, the coverage is incomplete, since the obligation of small scale industries to furnish the necessary data is not statutory. Public sector's coverage is complete.

(b)   This DGE&T survey concerns only the registered factories and establishments, so the remaining unregistered factories are not covered.

(c)   The information collected by the DGE&T is not from
the person to person convassing but from the employer or
the manager-in-charge. So the reliability of this data is
open for questioning.

The data collected by the Registrar General of India,
Census, has also got some shortcomings:

(a)   The data are collected only once in every 10 years
and there is a large time lag between its collection and
publication.

(b)   Comparison of the Census data with that of the other
previous or subsequent Census is not possible because of
the conceptual and definitional changes.

But the Census data has the following advantages
which outweight the disadvantages:

(a)   Coverage of Census Survey is almost 100 per cent.

(b)   Information is gathered on the basis of person to
person canvassing.

(c)   The data presented by the Census is exhaustive in
the sense that it gives industrial classification and
occupational classifications upto a micro level. Occupations
were first divided into 9 divisions (single digital classi-
fication). They were further classified into major groups
(second digital classification). These major groups were
further classified into families (three digital classification).
Moreover, it gives the detailed occupational structure in
each and every industrial category.

(d)   Detailed educational attainment of workers in each of the occupational groups are given.

(e)   Status and class of the workers in each of the occupational groups are given in detail.

(f)   The above information is provided both for rural and urban areas.

Moreover this study is based on the cross-sectional data and so the problem of incomparability of data over a time period does not arise. Because of these reasons the Census data has been taken as the base for this study.

In this study primarily the 1971 census data for the two states of Punjab and Karnataka has been used. Almost all the data that are presented in this study are taken from B-V and V-VI tables of the economic tables volumes of Punjab and Karnataka. The data on socio-economic and demographic indicators for identifying the levels of economic development of various districts of Punjab and Karnataka states in the study are collected and compiled from the 'Social and Cultural Tables', 'District Census Hand Books' and State 'Statistical Abstracts' of these two states.

Basic Concepts

In this study the basic concepts that one comes across are few in number but more complicated in nature. So, it is thought better to present them before hand with explanations as and when needed.

Since this is a cross sectional study of 1971 Census,
a 'worker' is taken as defined in this Census. "A 'worker'
is a person whose main activity is participation in any
economically productive work by his physical or mental
activity. Work involves not only actual work but effective
supervision and direction of work."[13] Occupation as referred
to in this study as per 1971 census definition is the function
which the worker personally performs by engaging himself
in any work, in any branch of economic activity which is
called his industry."[14]

> "When the forms of economic organisation are
> relatively simple, the difference between industry
> and occupation is so little, often they reflect
> each other. Although the concepts of occupation
> and industry are different, certain occupations are
> found to exist only in one industry. But a great
> number of occupations are found to exist in several
> industries".[15]

The main aim of this study is to see the relevance
of various levels of skills of labour force to the economic

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13. Appendix I, Economic Questions 1971 Census, Mysore
     Series, Economic Tables, Part II B (ii), Census of
     India 1971, p. 53.

14. Economic Tables Part II. B (ii), Mysore 1971, Census
     of India, 1971, Series 14, p. 15.

15. Ibid.

development of a region. The International Standard Classification of Occupations (in short ISCO) has listed about 1,345 different occupations and basing on the level of educational attainment and skill levels has categorised them into 4 broad groups. Similarly, International Labour Organization (ILO) and Organization for Economic Cooperation and Development (OECD) also have recommended the use of educational attainment as the means of identifying the levels of occupations.[16] While emphasising the importance of educational attainment, they also pointed out the need of taking training and other general qualifications which cannot be strictly measured in educational terms.

Keeping these things in mind, and also the social and economic conditions peculiar to India, we have categorised the 95 two digital occupational groups of the National classification of occupations,[17] into 23 different groups which were further regrouped into 5 levels of skills of occupational groups[18] for this study's purpose. They are

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16. ILO Report on the Meeting of Experts on the Assessment of Manpower and Training Requirements for Economic Development, Geneva, October 1962, p. 19.

17. A detailed National classification of Occupation (1968) is given in the Appendix I.

18. Regrouping of NCO groups into 5 different levels of skilled occupational groups are given in detail in the Appendix II.

I.   <u>Professional Group of Occupational Workers</u>: Where
the worker needs a minimum of university education
or an advanced teacher college degree or its
equivalent. In this category comes occupations
like Doctors, Engineers, Lawyers, Teachers, etc.

II.   <u>Skilled Group of Occupational Workers</u>: Here also
a worker needs good education. But sometimes the
intensity of training and dexterity of hand counts
more than education. In this way this group includes
a wide range of occupations like administrators,
nurses and other medical and surgical helpers,
draughtmen, specially trained tool workers, etc.

III. <u>Semi-Skilled Group of Occupational Workers</u>: In this
category the stress is more on the worker's training
and less on his educational attainment. Most of the
workers in this category have very little general
educational attainment. This group includes occupa-
tions like salesmen, fitters, carpenters, policemen,
fire-fighters, barbers and beauticians, etc.

IV.   <u>Unskilled Group of Occupational Workers</u>: In this
group workers are mostly without any educational
attainments. They either do not have any formal
training or have very little of formal training.
This comprises occupations such as house maids,
dhobis, unskilled office workers, peons, etc.

V.   Agricultural Group of Occupational Workers: This
        includes all occupations dealing with the agriculture,
        plantations, fisheries, forestry, livestock, etc.
        These occupations are a separate class all by themselves
        and it is very difficult to grade them according to
        the skill attainment.

        Besides these terms there are a few other terms which
need some explanation. In the following chapters reader
comes across terms such as employers, employees, single
workers and family workers.

        An 'employer' is a person who has to employ other
persons in order to perform a certain work. That is to say
such a person is not only responsible for his own personal
work but also for giving work to others. But a person who
employs domestic servants for household duties or has
subordinates under him in an office where he is employed
by others is not an employer.[19]

        An 'employee' is a person who usually works under
some other person for salary or wages in cash or kind.[20]

        A 'single worker' ... is a person who works by himself.
He is not employed by anyone else and in turn does not

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19.   Appendix I, Economic Questions 1971, Census, Punjab
        Economic Tables Part II-B, Census of India, p. 9.

20.   Ibid.

employ anybody else, not even members of his household
except casually. This definition of a single worker does
not include a person who works in joint partnership with
one or several persons hiring no employees, and so also
a member of producers'cooperative.[21]

A 'family worker' is a person who works without
receiving any wages in cash or kind, in an industry,
business or trade.[22]

The Study

Principle aim of this study is to find out the relation-
ship of various skill group workers to the economic
development. It is proposed to see this relation both
in relatively developed and less developed areas. It was
decided to take two states with two different levels of
developmental attainments. Availability of data was a
problem and hence the scope for choice of states with
different levels of economic developmental achievements is
greatly restricted.

At the time of undertaking this study occupational
data are available only for a few states. These states are
Assam, Karnataka, Kerala and Punjab. Though the states of
Assam and Kerala are placed at a lower rung of the economic

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21. Ibid.

22. Ibid.

development ladder, not much of a meaningful analysis could be done with them. It is because both the states are mainly plantation economies, and greater majority of its population is below the poverty line. Moreover, identifying the levels of economic development with the help of a group of variables is not really possible in these two states. Because of these vital reasons the states of Assam and Kerala cannot be undertaken for this study. Karntaka and Punjab are taken for this study because both these states are having comparable economies. Moreover, there is a wide gulf of economic disparity between these two states. Punjab having a high per capita income and higher per capita productivity in agriculture, is placed in the top quarter of the developed states in India. Karnataka, with low per capita income and per capita productivity in agriculture is placed well below Punjab. So it was thought some sort of meaningful analysis could be drawn from these two states.

This study attempts besides the main objective, to find out:

(a)   the regional variations in the occupational structure at the district level;

(b)   distribution of occupation in various industrial categories;

(c)   to find out the occupational differentiation at various skill levels.

So the above purpose various hypotheses formulated are the following:

(i) In less developed areas the occupational structure is more closely correlated with the economic factors and infrastructural factors than anything else.

(ii) In the relatively developed areas the occupational structure is more correlated to the infrastructural factors.

(iii) As development progresses, female work force gets more and more concentrated in the professional and skilled groups of occupations.

(iv) The less developed areas are characterised by a predominant male workforce in the professional and skilled groups of occupations.

(v) Irrespective of the developmental achievement of a region, semi-skilled group of occupations are largely male oriented.

Importance of the Study

In any country the change in national output cannot be fully explained by the changes in capital, labour and land alone. The remaining unexplained part, a significant one, in fact has been ascribed to the 'residual factor'.[23]

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23. U.N., Industrialization of Developing Countries: Problems and Prospectives, UNIDO Monograph No. 14, (UN Publications).

This residual factor is generally explained by increased productivity brought about by higher education, training and more effective utilization of labour force that is available in the country. So it is very important to see how far this 'residual factor' can explain a region's economic development.

A country's economic development is very closely related to the proper organization and employment of its manpower available. In this way manpower planning should become an integral part of the economic planning and thus assume a greater role than what it has upto now. "Such a science should have a set of principles, policies and guidelines and formulations of these would depend on the extent of thoroughness in the knowledge of current position in respect of manpower resources".[24] This necessitates an accurate assessment of labour force in the nation with its full details such as occupations, skill attainment, educational attainment of labour force etc. So consideration of future manpower situation involves an understanding of those portions of the population closely related to the labour force which holds the key to its future expansion.[25]

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24. General Report, Part I A(11) Mysore, Census of India, 1961.

25. General Report, Part I A(11), Mysore, Census of India, 1961.

In general a country's occupational pattern gives
a broad idea about the stage of economic development of
that country. It also tells us clearly about the economic
organization of the society. In the light of this an
analysis of statistics on occupations especially cross-
classified with industrial categories is not only desirable
but necessary for the formulation of regional programme
for economic development.[26]

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26.   K.L. Kohli, op. cit., pp. 132-33.

CHAPTER II

OCCUPATIONAL STRUCTURE OF LABOUR FORCE

It has already been discussed in the previous chapter that the states of Karnataka and Punjab have been selected for the analysis for occupational pattern. Before correlating the levels of skills and occupational structure of labour force to the level of regional economic development, we proceed to discuss in detail the occupational structure of labour force in these two states. For the sake of analysing, this topic has been divided into two chapters. The present chapter discusses the occupational structure of these two states and it has also been tried to see the variations in occupational distribution. This will be followed by the analysis of occupational structure at the district level in those states.

The main objectives in this Chapter are:

(a)   to determine the patterns of labour force distribution according to the major occupational divisions as well as levels of skills of labour force in both the states;

(b)   to see the inter-relationships of occupations with industrial categories both at the level of occupational division and also at different skills;

(c)   to study the occupational differentiation at different levels of skills; and

(d)   to compare the occupational structure of the
labour force of these two states.

This chapter deals with points a, b and d at state
level while the next one deals with objectives c and d
at the district level.

In 1961 census, economic data have been tabulated
for the first time separately for occupational and
industrial groupings. Both the groupings were based on
international standard classification. The only discre-
pancy in the Indian census data is that the occupational
groupings do not take into account the first two industrial
categories, namely, cultivators and agricultural labourers.[1]
That means the data provided by the Indian National
Classification of Occupations (NCO)[2] are incomplete to

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1.   J.N. Sinha, The Indian Working Force (Its Growth
and Changing Composition), Monograph No. II,
Census of India, 1961, p. 127.

2.   There are ten major occupational divisions in NCO
grouped 8 groups. They are:

Div 0-1   Professional, technical and related workers
    2   Administrative, executive and managerial
          workers
    3   Clerical and related workers
    4   Sales workers
    5   Service workers
    6   Farmers, Fishermen, Hunters, Loggers,
          and related workers
  7,8,   Production and related workers, transport
  & 9   and equipment operators and labourers
   10   Workers not classified by occupation (for
          full details on these classifications
          please see Annexure I).

ANALYSIS OF OCCUPATIONAL STRUCTURE - KARNATAKA

TABLE NO 2.1

DISTRIBUTION OF WORKERS IN EACH OCCUPATIONAL DIVISON AND RANKS ACCORDING TO CON CENTRATION - KARNATAKA

Occupational Divisions	Workers (In percents			Ranks		
	P	M	F	P	M	F
01 Professional, Technical & Related Workers	7.61	7.38	8.81	6	6	4
2. Administrative, Executive Managerial workers	2.55	2.95	0.51	7	7	7
3. Clerical and Related workers	12.18	13.14	7.29	3	2	5
4. Sales workers	12.18	13.14	7.29	3	2	5
5. Service workers	10.19	10.1	10.55	4	4	3
6. Farmers, Fishermen, Hunters etc	13.27	12.38	17.83	2	3	2
7,8 & Production and Related 9. workers Transport Equipment Operation and Labourers	46.13	44.97	52.07	1	1	1
TOTAL	100.00	100.00				

the extent that cultivators and agricultural labourers remain excluded. To cope up with this shortcoming, data on cultivators and agricultural labourers have been added to the NCO data to make it complete. (The data presented in this chapter do not include these two industrial categories 'cultivators' and 'agricultural labourers'. However, the NCO division 'Farmers, Hunters, etc.' includes the third category of I.S.I.C. namely 'Livestock, Forestry, Fishing, Hunting, Plantation, etc.').

The table No. 2.1 gives us the distribution of workers excluding the cultivators and agricultural labourers according to the major occupational divisions. The ranks were given in such a way that rank 1 is associated with the largest concentration while rank 2 is associated with the second largest and so on. The Table 2.1 brings out the following points clearly to the fore.

(a)   The rankings of divisions for total workers do not always tally with that of the male/female workers excepting the two divisions 'Production process, Transport and related workers' and 'Administrative, Executive, and Managerial workers'.

(b)   Most of the time ranks of total workers are influenced by the male workers because of their predominant presence. Only exception is: 'Farmers, Fishermen, Hunters, Loggers, etc.' where females are dominant in number. This is so

because all along the hill tracts of Karnataka State,
plantations mostly of coffee and others are an important
source of employment. In these plantations the nature of
work needs delicate handling and thereby provide women a
better chance of employment.

(c)   The difference among the ranks of various occupational
divisions of male/female workers and total workers is not
very great except in the case of "Architects, Engineers,
Surveyors and related workers' and 'Sales workers'. These
occupations involve a lot of sternous [strenuous] training and also hard
physical labour, for which men are more suitable. So
naturally these occupations are more male dominated. In
recent times new technological innovations have been making
these occupations less sternuous [strenuous] so one can find women also
in these, but still they are mostly male dominated.

(d)   Though the occupational division 'Administrative,
Executive and Managerial workers' ranks for total as well as
for male/female workers tally, there is a lot of difference
in the number of workers engaged in this division. These
rankings are only relative positions of occupational divisions
according to the workers concentration.

      As we have already explained in the previous chapter
we have five different levels of skills of occupational
groups. Since we are not dealing with the Agricultural
labourers, Cultivators and Farmers, Fishermen, etc.
the fifth group namely Agricultural workers has been left   out.

These five groups have been further reduced to 4 skill
level groups. They are:

(a)   Professiona;

(b)   Skilled occupations;

(c)   Semi-skilled occupations;

(d)   Unskilled occupations.

Another aspect of the work force is the status of the
worker. Here it is seen how these 4 different levels of
skill occupation groups are distributed according to the
status of workers. The Table No. 2.2 gives the necessary
data for the analysis.

Table No. 2.2 is analysed below according to the
status of the workers.

Employers: Most of the workers in this group are semi-
skilled in nature. Second largest concentration is among
unskilled labour. Skilled occupations come at the third
place while very few employers are professionals. Distri-
bution of female workers in this class is more uneven than
that of the male workers.

Employees: Most of the workers in this class are unskilled
labourers while the second largest concentration group is the
semi-skilled group. Among the male employers skilled group
occupies the fourth place. Very few of the male workers in
this class are professionals while female professionals occupy
the third largest position. Here also the distribution of

TABLE - 2.2

DISTRIBUTION OF DIFFERENT LEVELS OF SKILL GROUPS OF OCCUPATIONAL WORKERS IN EACH OF THE FOUR DIFFERENT CLASSES OF WORKERS

Skill Group Occupation	Employers		Employees		S. Workers		F. Workers	
	M	F	M	F	M	F	M	F
I. PROFESSIONAL	1.78	2.92	11.33	17.72	2.17	1.21	0.67	0.89
II. SKILLED	16.58	5.57	15.25	8.52	9.25	2.59	10.38	4.17
III. SEMI-SKILLED	59.49	57.82	35.90	24.64	47.48	41.27	53.23	41.47
IV. UNSKILLED	22.15	53.69	37.51	49.12	41.10	54.93	35.72	53.47
TOTAL	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

female workers is more uneven than that of the male workers.

Single Workers: The distribution of workers in this class is equally uneven in both the sexes. Most of the male workers of this class are semiskilled in nature while among females most of them are unskilled. There seemed the largest concentration of unskilled male workers while for females the concentration was in the semiskilled group. The third and fourth largest groups of concentration for both males and females are skilled and professional groups respectively.

Family Workers: In this class of workers, the largest concentration of male and female workers can be found respectively in the groups semi-skilled and unskilled. The third and fourth largest concentration of workers for both the male/female workers in the class are skilled and professional groups. The second largest concentration for male workers is unskilled while for female workers it is semi-skilled group.

The Table No. 2.3 presents another aspect of the status and level of skill of workers in the State of Karnataka. In the Table it is given how workers in each skill group are distributed over the different statuses.

This table says:

(a)   In all the 4 different levels of skill group occupations most of the male/female workers belong to the class of employees.

TABLE 2.3

DISTRIBUTION OF EACH OF THE SKILL GROUP WORKERS OVER THE DIFFERENT CLASSES OF WORKERS - KARNATAKA 1971

Occupation Group	Employers		Employees		S. Workers		F. Workers	
	M	F	M	F	M	F	M	F
PROFESSIONAL	1.57	.46	90.71	95.66	7.43	3.46	0.28	0.42
SKILLED	8.48	1.56	70.65	81.87	18.35	13.10	2.52	3.47
SEMI SKILLED	10.01	3.25	54.73	47.71	31.01	42.08	4.25	6.96
UNSKILLED	4.11	1.17	63.11	58.71	29.63	34.58	3.45	5.54
TOTAL	6.94	1.77	62.84	60.88	26.93	32.07	3.29	5.28

(b)   In the second largest class of workers both male and female are of the 'single workers' group.

(c)   Employers and family workers claim the third and fourth largest positions respectively both for male/female workers.

(d)   The degree of unevenness in distribution of workers in all the 4 different statuses of workers is more among female workers than that of the male workers.

The relation between occupations and industries depends mostly on the forms of economic organisation. It also gives an idea of the division of labour achieved by the society for each industry. The distribution of occupations over industries can be presented in a table form. This table throws light on various occupational skills in each industry. The Table No. 2.4 gives this kind of an industry occupation-matrix between the 8 industrial categories,[3] and the four skill level occupational groups that were formed for this study's purpose.

_____

3.   Altogether, Census of India has listed 10 industrial categories. They are: (I) Cultivators; (II) Agricultural Labourers; (III) Livestock, Forestry, Fishing, Hunting, etc.; (IV) Mining and Quarrying; (V a) Manufacturing, Servicing, Repairs, etc., Household Industry; (V b) Manufacturing, Servicing, Repairs, etc., Non-household Industry; (VI) Construction; (VII) Trade and Commerce; (VIII) Transport, Storage and Communications; (IX) Other services.

DISTRIBUTION OF VARIOUS LEVELS OF SKILLED OCCUPATIONAL GROUPS IN

VARIOUS INDUSTRIAL CATEGORIES — KARNATAKA - 1971

		III	IV	Va	Vb	VI	VII	VIII	IX	Total
Professionals	P	0.75	0.21	0.05	4.23	0.59	3.60	0.51	90.06	100.00
	M	0.83	0.22	0.06	4.90	0.71	4.31	0.58	88.40	100.00
	F	0.39	0.19	0.03	1.10	0.03	0.25	0.21	97.81	100.00
SKILLED	P	0.14	0.72	18.26	39.95	4.75	6.13	4.18	25.86	100.00
	M	0.14	0.61	17.76	41.71	4.79	6.27	4.43	24.28	100.00
	F	0.19	2.21	24.84	16.86	4.21	4.33	0.83	46.53	100.00
SEMISKILLE D	P	0.76	2.15	25.90	23.52	0.84	25.45	11.03	10.35	100.00
	M	0.70	2.22	20.23	23.79	0.89	27.76	12.52	11.89	100.00
	F	01.06	1.82	54.41	22.13	0.59	13.83	3.51	2.65	100.00

		III	IV	Va	Vb	VI	VII	VIII	IX	Total
	P	1.21	2.03	2.00	11.34	15.22	22.10	10.84	35.26	100.00
UNSKILLED	M	1.04	1.88	2.06	11.41	15.52	24.53	11.07	32.40	100.00
	F	2.07	2.76	1.71	11.05	13.69	10.07	9.70	48.93	100.00

LEGEND: INDUSTRIAL CATEGORIES:

III —— Livestock, Forestry, Fishing, Hunting Plantation, etc.

IV —— Mining and Quarrying

Va —— Manufacturing, Processing, Household Indust.

Vb —— Manfact, Processing, etc. : non-household Industries

VI —— Construction

VII —— Trade and Commerce

VIII—— Transport, Storage and Communications

IX —— Other services.

The main idea of the table No. 2.4 is to see how a certain number of workers in a particular level of skill occupation group are distributed over the industrial categories. About 90 per cent of the total professional group of workers are engaged in 'Other Services' category, and almost all the female professional workers (about 98%) are also found engaged in the 'Other Services' category. In the skilled group of occupational workers a majority of the total and male workers are found engaged in the category 'Manufacturing, Servicing, Repairs etc. and Non-Household Industry' while most of the female workers again are found in the 'Other Services' category. Very few workers total, male and female also are found in the category 'Livestock, Forestry, Fisheries, Hunting Plantation, etc.'.

Among the semi-skilled occupational group of workers, most of the total and female workers are engaged in the category 'Household Industries' while most of the male workers of this group are found in the category 'Trade and Commerce'. The least number of total and male workers in this group are engaged in the category 'Livestock, Forestry, Fisheries, etc.' while the least number of female workers are found in the category 'Construction'. A majority of the total as well as the male/female workers in the group unskilled occupations are found in the category 'Other Services'.

TABLE NO. 2.5

DISTRIBUTION OF VARIOUS SKILL LEVEL OCCUPATIONAL GROUPS IN EACH INDUSTRY KARNATAKA 1971

		Profession -nals	Skilled occupant	Semiskilled occupant	Unskilled occupant	Total
	P	6.36	2.22	41.79	49.62	100.00
III	M	7.68	2.68	42.66	46.98	100.00
	F	2.35	0.84	39.15	57.66	100.00
	P	0.84	5.33	55.32	38.51	100.00
IV	M	0.86	5.09	57.91	36.14	100.00
	F	0.74	6.44	43.44	49.38	100.00
	P	0.02	16.04	79.39	4.54	100.00
Va	M	0.03	20.68	73.75	5.54	100.00
	F	0.01	5.17	92.63	2.19	100.00
	P	1.48	26.01	53.44	19.07	100.00
Vb	M	1.61	28.77	51.42	18.20	100.00
	F	0.55	61.31	67.73	25.41	100.00

		Profession -nals	skilled occupant	Semiskilled occupant	Unskilled occupant	Total
VI	P	0.67	10.04	6.21	83.08	100.00
	M	0.77	10.94	6.38	81.90	100.00
	F	0.04	4.51	5.20	90.25	100.00
VII	P	1.25	3.98	57.69	37.07	100.00
	M	1.35	4.12	57.22	37.31	100.00
	F	0.19	2.41	62.96	34.44	100.00
VIII	P	0.39	5.89	54.25	39.47	100.00
	M	0.39	6.38	56.42	36.81	100.00
	F	0.32	0.93	32.10	66.65	100.00
IX	P	24.02	12.83	17.93	45.21	100.00
	M	23.56	13.58	20.83	42.03	100.00
	F	26.18	9.31	4.33	60.18	100.00
TOTAL	P	7.06	13.14	45.86	33.94	100.00
	M	6.88	14.45	45.26	33.40	100.00
	F	8.03	6.00	49.09	36.88	100.00

The Table No. 2.5 gives a different kind of occupation-industry matrix. The main aim of this Table is to see the skill-mix of workers in each of the eight industrial categories. From this table, the following observations are made:

(a)   Five out of eight industrial categories taken have a majority of the semi-skilled occupational group of workers, while the remaining three categories namely Livestock, Forestry, Fisheries, etc., Construction and Other Services' have a predominantly 'unskilled' occupational workers.

(b)   In all the eight categories excepting 'Livestock, Forestry, Fisheries, etc.' category, 'Professional' group of occupational workers are the smallest while the 'skilled group of occupational workers is the only exception where it is the smallest.

(c)   Distribution of workers of the 4 different levels of skill occupational groups is not even. But the distribution of female workers in the eight categories is more uneven than that of the male workers in all the eight industrial categories.

The Table No. 2.6 gives the distribution of workers in various occupational divisions (excluding cultivators and agricultural labourers). This is prepared exactly on the same lines as the Table No. 2.1. The main observations from this Table are:

ANALYSIS OF OCCUPATIONAL STRUCTURE - PUNJAB

TABLE NO. 2.6

DISTRIBUTION OF WORKERS IN EACH OCCUPATIONAL DIVISION AND RANKS ACCORDING TO CON.

CENTRATION - PUNJAB

Occupational Divisions	Workers (in percents)			Ranks		
	P	M	F	P	M	F
0-1. Professional, Technical & Related workers	8.92	6.94	53.48	4	6	1
2. Administrative, Executive and Managerial workers	6.97	7.26	0.38	6	5	7
3. Clerical and Related Workers	9.04	9.19	5.43	3	3	4
4. Sales Workers	17.79	18.48	2.33	2	2	5
5. Service Workers	8.16	7.87	14.60	5	4	3
6. Farmers, Fishermen Hunters etc	2.88	2.96	1.13	7	7	6
7,8 & Production and Related workers 9. Transport Equipment operators and Labourers	46.24	47.29	22.65	1	1	2
TOTAL	100.00	100.00	100.00			

(a)   Female labour force in all the occupational divisions
is small. The total female labour-force itself is very
small when compared to the male labour force.

(b)   Almost all the ranks of total workers in these
divisions are influenced by the male labour force just
because of their larger number.

(c)   Ranks given are relative to the concentration of
workers in other divisions in the same sex group, so they
are as high or as low as others. But ranks of female
work force should be treated with caution because of their
small size.

        Distribution of workers according to their level
of skills in each of the four different statuses of workers
is given in the Table No. 2.7.

        The few observations that are made from the Table
No. 2.7 are:

(a)   In the class of employers a large number of the
male/female workers are of skilled nature. Very few of
the male workers belong to the professionals group where
as that group stands as the second largest among female
workers. The second and third places for male workers
in this class go to semi-skilled and unskilled groups
respectivelly. For females, semi-skilled workers occupy
the third and last place since there are no unskilled
employers at all.

(b)   In the employees' class, most of the male workers
belong to the semi-skilled group while most of the female

TABLE 2.7

DISTRIBUTION OF WORKERS ACCORDING TO THEIR LEVEL OF SKILLS IN EACH OF THE DIFFERENT CLASSES OF WORKERS - PUNJAB 1971

Occupation Group.	Employers		Employees		S. Workers		F. Workers	
	M	F	M	F	M	F	M	F
PROFESSIONAL	1.22	22.22	10.09	61.68	2.01	4.54	0.73	2.55
SKILLED	62.64	66.67	28.35	13.34	12.58	20.36	15.86	31.40
SEMI-SKILLED	25.66	11.11	34.91	5.04	49.37	21.33	64.63	22.29
UNSKILLED	10.49	-	26.65	19.94	36.04	53.77	18.78	43.76
TOTAL	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

workers belong to the group of professionals. For males the professional group and for females the semi-skilled group is the smallest concentrated group. For male worker groups skilled and unskilled come at second and third places respectively. For female workers second and third places are occupied by groups unskilled and skilled respectively.

(c)   In the class of single workers, most of the male workers are of semi-skilled nature while most of the female workers are of 'unskilled' nature. Professional group is the smallest concentrated in both the sexes. The second and third places of largest concentration groups for male workers are respectively unskilled and skilled. For female workers these places are occupied by semi-skilled and skilled groups.

(d)   In the class of family workers highest concentration of workers for males and females are respectively found in the groups semi-skilled and unskilled. The smallest concentration is found in the professional group for both the sexes. For male workers in this class the second and third largest concentrations are found in unskilled and skilled groups respectively, while for females these two places are found in the skilled and semi-skilled groups respectively.

        The same data have been presented in the following Table No. 2.6 which throws light on a different aspect of the occupational group-status of the worker matrix. This

TABLE 2.8

DISTRIBUTION OF WORKERS IN EACH SKILL LEVEL OCCUPATION OVER A DIFFERENT CLASS OF WORKERS

Occupation Groups	Employers		Employees		S. Workers		F. Workers		Total	
	M	F	M	F	M	F	M	F	M	F
PROFESSIONAL	0.13	0.03	85.63	98.45	13.64	1.36	0.60	0.16	100.00	100.00
SKILLED	1.87	0.36	69.60	72.33	24.74	20.68	3.79	6.63	100.00	100.00
SEMI-SKILLED	0.38	0.11	43.37	50.81	48.78	40.33	7.75	8.75	100.00	100.00
UNSKILLED	0.22	-	46.37	62.86	50.23	31.77	3.18	5.37	100.00	100.00
TOTAL	0.63	0.08	52.36	81.48	41.93	15.27	5.09	3.17	100.00	100.00

table gives the details regarding status of the workers
in each of the four different levels of skill groups.

The main observations of the Table No. 2.8 are:

(a)   The largest number of workers in all the 4 different
levels of skill groups are employees. In this, concen-
tration of female workers is much more than that of the
male workers. In the total female workers concentration
is about one and a half times greater than that of the
male workers.

(b)   Second and third largest groups of concentration
for both male/female workers can be found in the classes
'single workers' and 'family workers' respectively.

Table No. 2.9 presented :   .   · gives the relation
between levels of skill groups and the major industrial
categories in the State of Punjab. This Table gives a
clear picture of how a specific skill group of workers
are distributed in the major industrial categories.

The highest concentration of male and female profe-
ssional workers is found in the category 'Other Services'.
Most of the total and male workers of the group skilled
occupation are concentrated in the category 'Non-Household
Industry' while female skill occupational workers are
mostly found in the categories 'Other Services'. Both
total and male semi-skilled workers are concentrated in
the category 'Trade and Commerce' while most of the female

TABLE 2.9

DISTRIBUTION OF VARIOUS LEVELS OF SKILL OCCUPATIONAL GROUPS IN VARIOUS INDUSTRIES - PUNJAB, 1971

		III	IV	Va	Vb	VI	VII	VIII	IX	Total
PROFESSIONAL	P	0.28	0.01	0.06	1.87	0.56	6.32	0.51	90.40	100.00
	M	0.32	0.01	0.08	2.56	0.77	8.65	0.69	86.92	100.00
	F	0.18	-	-	0.04	-	0.07	0.02	99.70	100.00
SKILLED	P	0.03	0.02	9.56	45.30	3.03	1.10	1.73	39.22	100.00
	M	0.03	0.02	9.67	45.46	3.11	1.12	1.77	38.82	100.00
	F	-	-	5.86	40.21	0.62	0.51	0.43	52.38	100.00
SEMI-SKILLED	P	0.11	0.05	13.55	22.19	1.07	36.25	12.78	13.99	100.00
	M	0.11	0.05	13.00	22.19	1.07	26.59	12.93	14.09	100.00
	F	0.12	0.03	51.49	23.04	1.08	13.68	3.37	7.18	100.00
UNSKILLED	P	0.41	0.04	3.15	11.13	15.38	21.69	6.11	42.09	100.00
	M	0.42	0.04	3.21	11.31	15.85	22.32	6.26	40.59	100.00
	F	0.31	0.03	1.59	6.48	3.09	5.07	2.16	81.27	100.00

Legend: Industrial Categories

IV — Mining, Quarrying etc,
III — Fisheries, forestry, animal husbandary, etc
Va — Household industries
Vb — Non-household Industries
VI — Construction
VII — Trade and Commerce
VIII — Transport, Storage and Communication
IX — Other services

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belonging to this group are found to be engaged in the
category 'Household Industry'. Most of the total, male
and female workers of unskilled group are found in the
industrial category 'Other Services'. Very few, infact
negligible number of workers of all the four skill level
occupational groups are found in the category 'Mining and
Quarrying', while the category 'Fisheries, Livestock,
Forestry, etc.' comes at a slightly higher place.

Table No. 2.10 presents the same data differently.
This table gives the skill mix of workers in each of the
8 industrial categories. A careful look through the table
brings about the following points:

(a) Almost all the industries excepting 'Livestock,
Forestry, Fisheries, etc.' 'Trade and Commerce' and 'Other
Services' have very few professional workers. In the
categories 'Livestock, Forestry etc.' and 'Trade and
Commerce' skilled workers group is the smallest, while in
the 'Other Services' category it is the semi-skilled group
of workers who are very few in number.

(b) In the categories 'Livestock, Forestry, Fisheries,
etc.' and 'Ohter Services' most of the total and male
workers are unskilled, while female workers are professional
workers. Only in the category 'Construction' all the
workers male/female are unskilled.

TABLE 2.10

DISTRIBUTION OF VARIOUS SKILL LEVEL OCCUPATIONAL GROUPS IN EACH INDUSTRY - PUNJAB 1971

Industrial Category		Professionals	Skilled occupant	Semi-skilled occupant	Unskilled occupant	Total
III	P	10.81	3.17	24.64	61.38	100.00
	M	9.32	3.30	25.23	62.15	100.00
	F	46.73	-	10.28	42.99	100.00
IV	P	1.73	9.83	60.31	28.13	100.00
	M	1.76	9.96	60.55	27.73	100.00
	F	-	-	42.86	57.14	100.00
Va	P	0.05	23.12	66.73	10.10	100.00
	M	0.05	23.72	65.87	10.36	100.00
	F	-	9.80	85.83	4.37	100.00
Vb	P	0.62	42.78	42.66	13.94	100.00
	M	0.63	42.56	42.93	13.94	100.00
	F	0.15	54.38	31.06	14.41	100.00
VI	P	0.76	11.70	8.43	79.05	100.00
	M	0.76	11.78	8.38	79.08	100.00
	F	-	9.13	15.95	74.92	100.00

TABLE 2.10 (Continued)

Industrial Category		Profession als	Skilled occupant	Semi-skilled occupant	Unskilled occupant	Total
VII	P	2.08	1.04	69.70	27.18	100.00
	M	2.09	1.03	69.76	27.12	100.00
	F	0.99	2.23	60.04	36.74	100.00
VIII	P	0.49	4.81	72.21	22.48	100.00
	M	0.49	4.81	72.38	22.32	100.00
	F	0.76	5.78	45.36	48.10	100.00
IX	P	20.33	25.30	18.36	36.01	100.00
	M	15.77	26.94	20.20	37.09	100.00
	F	62.26	10.23	1.40	26.11	100.00
TOTAL	P	7.40	21.23	43.20	28.16	100.00
	M	5.63	21.53	44.49	28.35	100.00
	F	46.76	14.62	14.57	24.05	100.00

(c)   Most of the workers in the 'Household Industries',
and 'Trade and Commerce' categories are semi-skilled in
nature. Most of the male and total workers in the
categories 'Mining and Quarrying, Transport and Communication
etc.' are semi-skilled in nature while female workers in
these two categories belong to the unskilled occupational
group.

Comparison of Occupational Structures of Karnataka and Punjab

In the preceeding two parts occupational structures
of Karnataka and Punjab States are analysed in detail.
Now this part attempts to draw the comparisons between the
occupational structure of both the States. Since the
preceeding parts of this chapter dealt with occupational
structure separately in detail, here only main observations
are given in a comprehensive manner.

Since Karnataka is geographically a bigger state and
much populous one too, it is but natural to have a large
work force, when compared to Punjab a smaller state and
having a smaller size of work force. But if one see the
sex composition of the work force in both the States one
can observe that the female work force is unusually small
in Punjab than in Karnataka. It can be judged from the
work force participation rates for both the states,

WORK FORCE PARTICIPATION RATES

Persons	Karnataka	Punjab
Persons	34.74	28.87
Males	54.40	52.82
Females	14.20	1.18

The difference in male and persons participation rates is not much but among female participation rates there is a glaring difference. Punjab's female participation rates is among the lowest in Indian states. One reason for this is probably the States economic affluence in recent times. Since the green revolution in Punjab, farms are more mechanised and the productivity has also increased. This released a large number of female workers hitherto engaged in that primary sector, and also the lack of scheduled tribe population whose female population is usually more engaged in economic activity, be it agricultural labour or something else has greatly caused such a low female participation rates in Punjab. Besides this the increasing education of Punjabi women has also caused a decline in the female participation in Punjab. In light of this if one can see minutely the decline in agricultural activity is coupled with a light rise in the female participation in tertiary and secondary sectors. But the predominance

of agriculture sector over other sectors has over shadowed these small changes.

But the other point is that most of the total and male workers in both the States belong to the occupational category 'Production process, Transport etc.'. Most of the females in Karnataka State also belong to the same occupational category. In the State of Punjab most of the female workers belong to the occupational division 'Professional, Technical and Related workers'.

When it comes to absolute number of females engaged in this category, it is smaller than that of the Karnataka's number. But of the small size of the female labour force in Punjab, a large number of females are found in 'Professional, Technical and Related Workers' because of the relative affluence of the state which made higher education within reach of a majority and also the higher social status and prestige attributed to the professional and technical occupations.

Most of the male and female workers in all the four levels of skill occupations in the state of Karnataka belong to the 'employee' class. While only female workers in all the four levels of skill occupations in Punjab belong to the 'employee' class. Male workers in Punjab State are distributed diversely while most of the professional and skilled group of workers belong to the employees, most of the semi and unskilled workers belong to the single workers class.

A greater majority of male workers in the classes
of employers, single workers and family workers in
Karnataka belong to the occupational group 'semi-skilled'.
While in employee class they belong to the unskilled
group. In Punjab, most of the male single, and family
workers and employers belong to the semi-skilled group
while most of the male employers are engaged in the group
of skilled workers.

In Punjab most of the female single and family
workers belong to the group of unskilled occupations while
female employers and employees are engaged in professional
and skilled group of occupations respectively. In Karnataka
most of the women employees, single workers and family
workers belong to the unskilled group of occupations while
women employers are mostly semi-skilled group of
occupation.

Most of the professional group of occupational
workers both in Karnataka and Punjab also are engaged in
the 'Other Services' category. While the predominance
of tertiary sector over the secondary sector, the Indian
economy has usually provided more employment avenues both
in the public sector and private sector organisation for
the professional workers. Most of the total and male
skilled workers are engaged in the category 'Non-Household
Industries' in both the States while female workers of the

same group in both the States are found mostly engaged
in the category 'Other Services'. Majority of the
Karnataka's total and female semi-skilled workers are
engaged in the 'Household Industry category' while male
workers of the same group belong to the 'Trade and Commerce'
category. In Punjab most of the semi-skilled total and
male workers are engaged in the 'Trade and Commerce'
category, while most of the females are found in the
'Household Industries' category.

Most of the total, male and female unskilled workers
in both the states are found engaged in the category
'Other Services'.

Comparing the skill mix of workers in each of the
industrial category of both the states one can see that
the distribution pattern of skill workers is almost similar.
In the category of 'Non-Household Industries' Punjab has
dominantly skilled workers while the same industrial
category in Karnataka abounds in semi-skilled workers.
In the category of 'Other Services' female workers of
Punjab are more of 'professional' nature while in Karnataka
they are mostly of unskilled nature.

The conclusion that one can draw from the above
analysis is, not withstanding the differences in the level

of economic development of the States Punjab and Karnataka, the pattern of distribution of workers according to their levels of skill attainments is not exactly the same. The major difference is that the female labour force of Punjab is in general more well equipped with skills than their counterparts of in Karnataka State.

CHAPTER III

OCCUPATIONAL STRUCTURE OF LABOUR FORCE IN
KARNATAKA AND PUNJAB - A DISTRICT
LEVEL ANALYSIS

As said in the previous chapter, this one deals
with the pattern of occupational structure at the district
level in both the States. Besides that it also deals
with the differentiation of occupations by sex.

While categorising the occupations according to
their skills, agricultural occupations like cultivators
and agricultural labourers besides farmers, livestock,
fisheries, forestry etc. are also taken into consideration
and a new 'agricultural group of occupations' is formed.
The tenth NCO division 'occupations not classified' is
however not taken into consideration in the whole of the
study. It is done this way because it is difficult to
categorise them according to their skill attainment. Also
these workers are so few in number that it is hardly
significant to include them.

District Level Occupational Structure Karnataka

The district-wise data of workers with different
levels of occupational skills for Karnataka State are given
in Table 3.1. This table gives data separately for total,
rural and urban areas of each district. A careful glance
through the Table 3.1 brings the following points to the
fore:

TABLE 3.1

CLASSIFICATION OF OCCUPATIONS (AT DISTRICT LEVEL) ACCORDING TO THE LEVELS OF SKILLS

K A R N A T A K A (1971)

1	2	3	PROFESSIONALS			SKILLED			SEMISKILLED			UNSKILLED			AGRICULTURE WORKERS		
			P	M	F	P	M	F	P	M	F	P	M	F	P	M	F
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
1.	BANGALORE	T	3.68	3.08	8.04	10.39	11.23	4.21	24.50	25.11	19.99	18.34	18.26	18.96	43.09	42.32	48.80
		U	5.75	4.51	15.82	16.80	17.95	7.46	42.01	42.63	36.90	29.95	29.60	32.81	5.49	5.33	6.92
		R	1.46	1.52	1.06	3.51	3.84	1.33	5.74	5.85	5.00	5.92	5.80	6.69	83.37	82.99	85.92
2.	BELGAUM	T	1.66	1.75	1.27	4.21	4.84	1.64	12.27	13.25	8.31	8.46	7.22	3.37	75.40	72.94	85.40
		U	4.73	4.27	7.86	13.18	14.47	4.39	35.81	35.71	36.42	19.66	20.35	14.99	25662	25.20	36.34
		R	1.04	1.20	0.48	2.41	2.70	1.30	7.55	8.25	4.91	3.81	4.30	1.97	85.19	83.54	9.34
3.	BELLARY	T	1.65	2.00	0.60	3.17	3.77	1.38	10.31	11.73	6.12	10.39	11.36	7.50	74.48	71.13	84.39
		U	3.89	4.02	3.30	7.81	8.87	2.89	27.16	29.94	14.28	24.37	25.77	17.88	36.77	31.39	61.65
		R	0.99	1.33	0.09	1.80	2.07	1.10	8.35	5.64	4.57	6.27	6.55	5.52	85.59	84.40	88.72
4	BIDAR	T	1.51	1.65	0.86	2.58	2.94	0.97	10.72	11.59	6.83	9.32	9.42	8.90	75.86	74.40	82.43
		U	5.73	5.61	6.45	7.13	7.70	3.75	38.41	39.27	33.22	28.98	29.23	27.50	19.75	18.19	29.08
		R	0.92	1.08	0.27	1.95	2.25	0.68	6.90	7.56	4.05	6.61	6.53	6.94	83.61	82.58	88.06

TABLE 3.1 (continued)

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1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
		T	1.83	2.07	0.97	2.50	3.00	0.74	13.52	14.10	11.44	6.57	7.14	4.54	75.58	73.69	82.31
5.	BIJAPUR	U	4.51	4.61	4.05	5.44	6.21	1.93	44.23	43.86	45.93	19.30	20.42	14.21	26.51	24.89	33.88
		R	1.24	1.47	0.44	1.86	2.25	0.53	6.79	7.17	5.48	3.78	4.06	2.86	86.33	85.05	90.68
		T	1.82	1.91	1.45	2.17	2.52	0.72	7.89	9.04	2.92	11.39	10.96	13.13	76.73	75.51	81.78
6.	CHIKMAGALUR	U	5.60	4.63	12.70	7.26	7.86	2.86	29.67	31.70	14.81	32.53	30.45	47.80	24.93	25.36	21.83
		R	1.24	1.45	0.44	1.39	1.61	0.53	4.55	5.25	1.85	8.14	8.65	10.02	84.67	84.03	87.16
		T	1.64	1.97	0.54	2.52	3.01	0.86	10.99	11.92	7.89	7.68	8.09	6.32	77.17	75.00	84.39
7.	CHITRADURG	U	4.65	4.74	4.15	9.04	10.05	2.87	41.03	42.60	31.49	28.19	26.88	36.14	17.09	15.73	25.35
		R	1.06	1.37	0.15	1.27	1.47	0.64	5.22	5.19	5.31	3.75	3.97	3.06	88.70	88.00	90.84
		T	2.15	2.04	2.41	3.16	4.05	0.88	9.15	11.16	4.03	12.54	12.91	11.59	73.00	69.84	81.09
8.	COORG	U	5.36	4.61	8.54	8.73	9.83	4.07	27.52	32.04	8.41	32.77	33.02	31.74	25.62	20.50	47.24
		R	1.64	1.58	1.77	2.27	2.99	0.55	6.24	7.35	3.58	9.32	9.24	9.51	80.53	78.83	84.58
		T	2.67	3.17	1.40	4.50	5.78	1.24	17.99	21.31	9.56	12.26	15.10	5.03	62.58	54.63	82.77
9.	DHARWAR	U	4.31	4.15	5.09	8.74	9.77	3.56	33.53	34.35	29.46	24.10	26.15	13.77	29.32	25.58	48.12
		R	1.81	2.51	0.46	2.25	3.09	0.65	9.73	12.50	4.46	5.97	7.64	2.79	80.24	74.26	91.64

TABLE 3.1 (Contd)

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
10.	GULBARGA	T	1.47	1.65	0.78	2.47	2.86	0.96	10.97	11.32	9.63	9.71	9.90	8.96	75.38	74.27	79.67
		U	4.92	4.94	4.83	8.97	10.29	3.18	36.13	36.10	36.27	29.85	31.01	24.70	20.13	17.66	31.06
		R	0.87	1.06	0.16	1.34	1.53	0.62	6.62	6.89	5.58	6.22	6.13	6.57	84.95	84.39	87.07
11.	HASSAN	T	1.98	2.00	1.83	1.95	2.08	1.09	7.80	8.10	5.81	7.49	7.05	10.35	80.78	80.76	80.92
		U	7.20	6.36	14.31	8.64	9.16	4.31	38.82	40.45	22.21	26.77	25.53	37.19	18.87	18.50	21.98
		R	1.29	1.41	0.55	1.07	1.11	0.76	3.74	3.68	4.13	4.94	4.53	7.58	88.96	89.27	86.98
12.	KOLAR	T	1.69	1.59	1.74	2.49	2.84	0.90	9.92	11.02	4.87	6.09	6.35	4.87	79.89	78.20	87.62
		U	5.77	4.62	14.35	8.89	9.40	5.09	40.41	42.99	21.03	23.58	22.84	29.13	21.35	20.14	30.40
		R	0.85	0.98	0.32	1.31	1.53	0.42	4.32	4.62	3.05	2.87	3.05	2.12	90.64	89.82	94.09
13.	MANDYA	T	1.62	1.72	1.46	2.18	2.24	1.69	6.39	6.70	4.16	6.51	6.36	7.60	83.23	82.98	85.08
		U	5.00	4.65	7.64	6.90	7.42	2.94	27.03	28.89	12.79	27.37	26.68	32.64	33.70	32.36	43.99
		R	1.23	1.31	0.63	1.51	1.51	1.52	3.50	3.56	3.01	3.58	3.49	4.24	90.18	90.13	90.60
14.	MYSORE	T	2.20	1.95	3.80	2.96	3.15	1.71	11.88	12.09	10.53	11.30	10.53	16.16	71.66	72.27	67.79
		U	7.31	5.84	17.84	9.67	10.52	3.63	37.67	38.91	28.76	29.04	28.28	34.53	16.30	16.45	18.23
		R	0.83	0.89	0.49	1.16	1.14	1.26	4.98	4.78	6.23	6.55	5.70	11.83	86.48	87.49	80.19

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
15.	N.KANARA	T	2.37	2.37	2.38	3.63	4.24	1.15	12.57	13.52	8.75	11.58	11.71	11.09	69.84	68.15	76.63
		U	5.06	4.31	9.74	9.35	10.46	2.35	38.08	39.82	27.15	32.54	31.41	39.68	14.97	14.00	21.08
		R	1.91	2.01	1.55	2.64	3.08	1.82	8.19	8.58	6.67	7.98	8.01	7.87	79.28	78.32	82.89
16.	RAICHUR	T	1.16	1.40	0.35	2.11	2.47	0.90	8.55	9.51	5.24	8.19	8.66	6.58	79.98	77.95	86.92
		U	3.24	3.45	2.18	5.26	5.80	2.57	25.84	28.68	11.61	31.21	31.73	28.61	34.45	30.34	55.03
		R	0.86	1.07	0.15	1.64	1.92	0.73	5.96	6.39	4.57	4.75	4.91	4.25	86.78	85.71	90.30
17.	SHIMOGA	T	2.44	2.61	1.58	4.74	5.44	1.16	10.17	11.19	4.98	8.72	8.78	8.40	73.93	71.98	83.87
		U	5.05	4.58	8.86	14.76	16.06	4.26	30.08	31.90	15.39	30.31	28.98	41.03	19.80	18.48	30.46
		R	1.76	2.05	0.40	2.11	2.43	0.66	4.95	5.31	3.29	3.06	3.05	3.11	88.11	87.16	92.54
18.	S. KANARA	T	2.01	2.28	1.59	3.94	5.64	1.23	22.12	20.79	24.23	12.04	14.27	8.50	59.88	57.02	64.46
		U	4.53	3.99	5.69	11.43	14.82	4.20	36.98	36.70	37.57	31.91	30.88	34.13	15.14	13.01	18.41
		R	1.48	1.87	0.89	2.33	3.41	0.72	18.44	16.93	21.95	7.79	10.24	4.12	69.46	67.55	72.32
19.	TUMKUR	T	1.80	1.89	1.28	2.19	2.41	0.95	8.65	8.55	9.21	5.54	5.47	5.91	81.82	81.67	82.64
		U	6.58	6.09	9.47	7.32	8.04	3.13	41.53	41.44	42.04	26.69	26.42	26.25	17.88	18.01	17.11
		R	1.27	1.42	0.44	1.62	1.78	0.72	5.02	4.88	5.82	3.20	3.13	3.61	88.88	88.79	89.41

(a)   A great majority of total workers, male/female
are found concentrated in the 'agricultural group of
occupations.

(b)   In all the districts as a whole, total and male
workers are found in very small numbers in the professional
group. Very few female workers are found in the skilled
group since all the occupations categorized as skilled · .
are male dominated. The only exception is the 'nurses and
other medical and health technicians' where a large no. of
female workers are concentrated. The districts Bellary, Bidar,
Chitradurga, Gulbarga, Mandya, Raichur and Belgaum show
little concentration of female workers in professional
occupations. It is so because of the small Size of female
workers in the total workforce. Moreover, usually a majority
of professional workers are engaged in tertiary sector, which
develops especially in Indian context to cater · the needs
of growing urban population. Incidently all above mentioned
districts with the sole exception of Bellary has got lower
proportion of urban population than the state average of
24.31%.

(c)   All the five groups of workers in all the 19 districts
are unevenly distributed. Distribution of female work force
is more uneven. The concentration of female labour force in
the agriculture group is greater than that of the male
labour force in that group. In the state as a whole 66.72%
of the workers are engaged in agriculture sector. More than
72% of the total female work force is engaged in this sector.

Second largest concentration of male workers in all the 19 districts with the exception of Chikmagalur and Coorg are found among the semi-skilled workers. In these two districts the second largest concentration of male work force is observed in the unskilled group because of the small number of industrial establishments especially household industries. Besides this the proportion of secondary sector workers to the total workers in these two districts are also small (It is 6.88% for Chikmagalur and 8.10% for Coorg). The second largest concentration of female labour is also found in the semi-skilled group in the following districts: 'Bangalore, Belgaum, Chitradurga, Dharwar, Gulbarga, South Kanara and Tumkur'. It is mainly because of large concentration of household industries. Most of these industries are run by women in the house where employment opportunities for women are more. In all these districts with the sole exception of Tumkur have got more than 10% of the total work-force engaged in the secondary sector. Kolar district has got the second largest concentrations of female labour in semi-skilled and unskilled groups (It is 4.87% in both these groups). In all the other districts the second largest concentration of female labour is found in unskilled group. It is because of the small number of household industries in those districts.

(d)   Most of the rural work force (on an average 80%) in the 19 districts is found concentrated in the agricultural group. There are very few professional workers in the rural areas of all the 19 districts.

(e)   The urban work force in 7 of the 19 districts, Bangalore, Belgaum, Bidar, Bijapur, Gulbarga, South Kanara and Tumkur are engaged mostly in semiskilled group. All these seven districts excepting Bidar and Tumkur has considerably large proportion of secondary sector workers. A large proportion of urban labour force in all these 7 districts is concentrated in the occupations 'Merchants, Technical salesmen, servicemen and others' and 'Tailors, weavers, shoemakers and other related works'. In South Kanara one can observe a large proportion of its urban labour force in 'non-metal processtug and related works'. In Bellary and Mandya these are engaged in agriculture group while in Raichur only total and female workers are engaged in unskilled group, because mostly they are engaged in occupations like clerical and shopkeeping, shop assistants, writers, stewards, building care takers, venders, pawn brokers and construction workers'. In the district of Chitradurga, Dharwar, Hassan, Kolar, Mysore and North Kanara one finds a large number of industrial establishments both household and non-household. That is why one finds the most of the urban male labour force in these districts in semi-skilled group.

The urban female work force of Chitradurga, Hassan, Mysore, and North Kanara is mostly of unskilled nature because of their relatively greater concentration in the occupations like cooks, housemaids, sweepers and related house keeping works which are mainly unskilled in nature. Also the large concentration of female labour in construction works explain this point. In Kolar and Dharwar districts they are engaged in agriculture group mostly. It is just because of lack of employment opportunities in other sectors in these two districts where secondary and tertiary sector's representation of workers is small. In Chikma galur most of the urban total and female labour force is concentrated in unskilled group while its male labour force is engaged mostly in semi-skilled group. In Coorg total and male urban work force is mostly found in the unskilled group of occupations. Female urban workers of this district are mostly concentrated in the agricultural group of occupations. Shimoga's urban total and female labour force is concentrated in the unskilled group while female urban workers are engaged in the semi-skilled group.

Table No. 3.2 presents the picture of the distribution of the total labour force in each and every district of Karnataka. Taking the State figures of distribution in each of the occupational group as an average it is seen here how these 19 districts can be grouped.

TABLE NO. 3.2

DISTRIBUTION OF TOTAL WORK FORCE - KARNATAKA

		Profession-al	Skilled	Semi skilled	Un-skilled	Agricultural
	KARNATAKA	2.02	3.75	13.11	9.70	71.42
1.	BANGALORE	3.68	10.39	24.50	18.34	43.09
2.	BELGAUM	1.66	4.21	12.27	6.46	75.40
3.	BELLARY	1.65	3.17	10.31	10.39	74.48
4.	BIDAR	1.51	2.58	10.72	9.32	75.86
5.	BIJAPUR	1.83	2.50	13.52	6.57	75.58
6.	CHIKMAGALUR	1.82	2.17	7.89	11.39	76.73
7.	CHITRADURGA	1.64	2.52	10.99	7.68	77.17
8.	COORG	2.15	3.16	9.15	12.54	73.00
9.	DHARWAR	2.67	4.50	17.99	12.26	62.58
10.	GULBARGA	1.47	2.47	10.97	9.71	75.38
11.	HASSAN	1.98	1.95	7.80	7.49	80.78
12.	KOLAR	1.62	2.49	9.72	6.09	79.88
13.	MANDYA	1.69	2.18	6.39	6.51	83.23
14.	MYSORE	2.20	2.96	11.88	11.30	71.66
15.	N.KANARA	2.37	3.63	12.57	11.58	69.84
16.	RAICHUR	1.16	2.11	8.55	8.19	79.98
17.	SHIMOGA	2.24	4.74	10.17	8.72	73.93
18.	S.KANARA	2.01	3.94	22.12	12.04	59.88
19.	TUMKUR	1.80	2.19	8.65	5.54	81.82

For this purpose we have made two groups, one where
'districts are below the State average' and the other
'those above the State's average. This table is analysed
according to the occupational group.

Professional Group: Of the 19 districts in Karnataka, 6
districts (about 31.58%) namely Bangalore, Dharwar, Shimoga,
North Kanara, Mysore and Coorg have a higher proportion
of professional workers than that of the State's average.
All these districts have nearly 18% of their work-force
engaged in tertiary sector excepting Shimoga which has got
only 14.78% of its work-force engaged in tertiary sector.
The remaining 13 districts have a lower proportion of
professional workers. This can be explained by the fact
that these 13 districts have lower urban proportion of
tertiary sector workers and also lower literacy rates than
the above average six districts.

Skilled Group: In this group districts Bangalore, Belgaum,
Dharwar, Shimoga and South Kanara are above the State
average. That is 26.32% of total districts are above the
State average. The remaining 14 districts are falling
below the State average figure of 3.75%. These five above
average districts are found to have a considerably higher
proportion of secondary sector workers and literacy rates
than the remaining 14 districts. They also have a consi-
derably large proportion of non-household industries than
the remaining districts. This explains why the unskilled
group of workers are more in thse 5 districts.

Semi-skilled group: Only 4 districts (21.05%) namely,
Bangalore, Bijapur, Dharwar, and South Kanara are observed
to lie above the state average can be explained by the
fact that these districts have a large number of household
industries which mostly need workers with little skills.
Only Bangalore has got a small proportion of household
industries but its urban character and the large number of
offices and industries provides employment to the large
semi-skilled workforce.   In the remaining 15 districts which
fall below the state average are characterised by the small
proportion of household industries which mainly provide
employment to this semi-skilled workers.

Unskilled group: Nine districts namely, Bangalore, Bellary,
Chikmangalur, Dharwar, Coorg, Gulbarga, Mysore, North Kanara
and South Kanara are above the state average of 9.70% in
unskilled group. The remaining districts are below the
state average.

Agricultural group: Only 4 districts namely, Bangalore,
Dharwar, North Kanara, and South Kanara, have a lower
proportion of their labour force engaged in agriculture
group than the state average. All the remaining 15 districts
have a larger proportion of workers in this group than the
state average.

    Taking all the 5 groups one can observe that Bangalore
and Dharwar, are above the state average in professional
skilled, semi-skilled and unskilled groups. Bijapur is above

average only in unskilled group while Coorg, Mysore and North Kanara figure above the average in professional and unskilled groups. Shimoga is above the average in professional and skilled groups. South Kanara is above the average in skilled , semi-skilled and unskilled groups. All the 4 districts Bangalore, Dharwar, North Kanara and South Kanara which fall below the State average of agriculture group are mostly above the average in other groups.

Occupational Differentiation[1]

Work force in most of the nations is generally predominated by the presence of large number of males. The difference between male and female labour force participation tends to decrease as a region develops. The relationship between female work participation rates and economic development has already been determined.[2]

Because of this it is particularly interesting to see how female and male workers are distributed over different occupations. This does not mean that absolute differences of workers in each of the 5 skill level groups. This differentiation tries to see if there are equal number of male

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1. K.L. Kohli, op. cit., p. 139.

2. John D. Durand, The Labour Force in Economic Development, Princeton University Press, 1975, pp. 123-146.

VALUES OF INDEX FOR OCCUPATIONAL DIFFERENTIATION – KARNATAKA

Districts	Professional	Skilled	Semi skilled	Un skilled	Agricultural workers
1. BANGALORE	0.554	1.455	1.114	0.981	0.929
2. BELGAUM	1.159	1.494	1.229	1.364	0.921
3. BELLARG	1.538	1.464	1.314	1.205	0.915
4. BIDAR	1.315	1.504	1.258	1.028	0.949
5. BIJAPUR	1.362	1.604	1.104	1.223	0.945
6. CHIKMAGALUR	1.137	1.556	1.512	0.910	0.960
7. CHITRADURGA	1.510	1.556	1.203	1.123	0.941
8. COORG	0.917	1.643	1.469	1.054	0.925
9. DHARWAR	1.387	1.647	1.381	1.500	0.795
10. GULBARGA	1.358	1.497	1.081	1.050	0.965
11. HASSAN	1.044	1.312	1.105	0.810	0.999
12. KOLAR	0.955	1.519	1.387	1.132	0.943
13. MANDYA	1.082	1.140	1.234	0.911	0.988
14. MYSORE	0.678	1.296	1.069	0.789	1.032
15. N. KANARA	0.998	1.573	1.214	1.027	0.941
16. RAICHUR	1.600	1.466	1.289	1.136	0.946
17. SHIMOGA	1.246	1.648	1.384	1.022	0.924
18. S. KANARA	1.178	1.641	0.924	1.253	0.939
19. TUMKAR	1.192	1.435	0.963	0.961	0.994
KARNATAKA	1.078	1.530	1.112	1.100	0.946

and female workers in a given region, how will they be distributed over various levels of skilled groups basing on the previously observed behaviour.

The methodology for construction of this index has been explained in the appendix. So only the values of these indices are presented in a tabular form in Table No. 3.3.

A careful glance through the Table No. 3.3 brings out of the following points:

(a)   Agricultural group of workers is predominated by the over representation of female workers in all the 19 districts of the State with the sole exception of Mysore district.

(b)   The skilled group of occupational workers dominated by the over representation of male workers in all the 19 districts.

(c)   In the semi-skilled occupations all the districts with few exceptions (of South Kanara and Tumkur) are marked by over representation of male workers.

(d)   Five districts namely Bangalore, Coorg, Kolar, Mysore and North Kanara are marked with over representation of females in the professional group. The occupations like Teachers both schools and colleges, life scientists and doctors etc. are having relatively higher proportion of female workers than that of the male workers.

(e)   In the unskilled group of occupations 13 of the 19 districts are marked by a relative over representation of male workers. The remaining six districts of Bangalore, Chikmagalur, Hassan, Mandya, Mysore and Tumkur are found to have over representation of females. Most of the unskilled occupations like housemaids, sweepers, food and beverage processers, stone cutters and construction workers and large number of female oriented works in the unskilled group have made the index in these six districts tilt towards female over representation.

District Level Occupational Structure: Punjab

The district-wise data of workers with different levels of occupational skills for the State Punjab has been presented in the Table No. 3.4. This table gives data separately for total, rural as well as urban areas of each district in Punjab. From this table the following points are clearly observed:

(a)   Invariably all the eleven districts of Punjab State are having a greater majority of the working population engaged in agricultural group of occupations. This trend is seen only in total as well as male workers.

(b)   Majority of female workers in all the eleven districts are engaged in the professional group of occupations. In that professional group also they are concentrated in the 'teachers' occupation. In all the eleven districts one can observe this trend.

TABLE — 3.4

CLASSIFICATION OF OCCUPATIONS (AT DISTRICT LEVEL) ACCORDING TO THE LEVELS OF SKILLS

PUNJAB (1971)

			PROFESSIONALS			SKILLED			SEMISKILLED			UNSKILLED			AGR WORKERS		
			P	M	F	P	M	F	P	M	F	P	M	F	P	M	F
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
1.	GURDASPUR	T	2.68	1.92	43.08	9.44	9.43	9.75	14.89	14.91	13.88	13.03	12.97	16.43	59.95	60.76	16.86
		U	6.85	4.45	64.12	17.69	18.13	7.20	36.89	38.12	7.43	30.93	31.38	20.19	7.64	7.92	1.06
		R	1.66	1.32	27.34	7.42	7.36	11.65	9.50	9.38	18.71	8.65	8.59	13.61	72.76	73.35	28.69
2.	AMRITSAR	T	2.51	1.74	35.41	8.12	8.02	12.22	20.36	20.59	10.51	11.93	11.66	23.70	57.07	57.98	17.15
		U	5.30	3.64	44.75	13.58	13.71	10.43	46.93	48.32	13.91	28.41	28.37	29.45	5.78	5.97	1.46
		R	1.36	0.98	26.99	5.86	5.74	14.25	9.39	9.43	6.68	15.12	4.94	17.20	78.26	78.91	34.88
3.	FEROZEPUR	T	2.17	1.61	35.08	4.19	4.14	7.46	11.42	11.51	10.29	7.01	6.89	14.37	75.14	75.86	32.81
		U	6.25	4.25	53.95	10.48	10.68	5.84	37.93	39.18	8.05	29.31	29.32	29.00	16.02	16.56	3.16
		R	1.27	1.05	20.44	2.81	2.74	8.71	5.07	5.59	12.03	2.10	2.09	3.02	88.15	88.52	55.80

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
		T	3.48	2.57	43.72	12.03	11.90	17.31	21.21	21.33	15.83	11.87	11.78	15.83	51.42	52.42	7.31
4.	LUDHIANA	U	5.50	3.75	48.35	19.61	20.01	9.89	43.62	44.63	18.77	26.47	26.67	21.52	4.80	4.94	1.47
		R	2.39	1.95	36.12	7.91	7.63	29.52	9.06	9.03	8.16	3.76	3.92	6.46	76.68	77.47	16.89
		T	3.45	2.50	41.63	11.42	11.53	7.12	20.10	20.23	14.98	13.39	13.16	22.63	51.64	52.58	13.64
5.	JULLUNDHAR	U	6.97	4.77	48.59	18.38	19.06	5.68	38.44	39.75	13.52	28.18	28.07	30.31	8.03	8.35	1.89
		R	1.98	1.59	30.79	8.52	8.51	9.35	12.45	12.38	17.25	7.22	7.17	10.64	69.83	70.35	31.97
		T	2.73	1.92	46.61	8.04	8.04	8.48	15.81	15.91	10.27	11.38	11.16	22.68	62.04	62.97	11.96
6.	KAPURTHALA	U	7.30	4.77	55.26	14.69	15.04	8.18	42.31	43.99	10.46	26.48	26.60	24.25	9.21	9.60	1.85
		R	1.33	1.07	30.93	6.00	5.97	9.02	7.65	7.63	9.92	6.73	6.61	19.85	78.30	78.71	30.28
		T	3.13	2.26	46.10	10.00	10.00	9.94	14.46	14.56	9.90	10.19	10.10	14.38	62.22	63.08	19.77
7.	HOSHIARPUR	U	9.17	6.32	60.97	10.52	10.69	7.52	36.39	38.10	5.34	33.06	33.55	24.11	10.85	11.34	2.06
		R	2.26	1.70	38.68	9.92	9.90	11.13	11.34	11.32	12.13	6.92	6.88	9.63	69.55	70.19	28.43
		T	3.11	2.56	35.05	7.23	7.10	14.85	15.26	15.39	7.17	10.98	10.82	20.74	63.42	64.13	22.18
8.	ROPAR	U	10.55	8.16	53.49	12.05	11.97	13.39	38.33	46.12	6.16	29.73	29.93	26.12	9.34	9.81	0.83
		R	1.80	1.62	18.78	6.39	6.29	16.14	11.21	11.25	8.67	7.70	7.61	15.99	72.90	73.23	41.01

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
		T	2.83	2.11	34.08	7.12	6.85	19.02	14.21	14.30	10.54	11.02	10.71	24.57	64.82	66.03	11.79
9.	PATIALA	U	8.27	5.96	44.93	12.10	12.27	9.93	36.41	38.01	10.92	32.57	32.59	32.28	10.65	11.16	2.59
		R	1.06	0.92	14.16	5.50	5.17	35.80	7.00	6.97	9.30	4.01	3.94	10.43	82.43	83.00	28.75
		T	1.92	1.54	33.15	4.91	4.79	15.28	11.57	11.56	12.38	6.98	6.78	23.79	74.61	75.33	15.40
10.	SANGRUR	U	5.64	4.24	42.34	9.05	9.12	7.34	31.12	31.96	9.19	25.58	25.30	32.90	28.60	29.38	8.22
		R	1.11	0.97	21.81	4.00	3.86	25.08	7.28	7.22	16.32	2.89	2.83	12.54	84.72	85.12	24.25
		T	2.02	1.65	30.20	3.70	3.60	10.81	11.21	11.16	14.81	6.27	6.10	19.64	76.80	77.49	24.54
11.	BHATINDA	U	6.14	4.65	42.49	9.73	9.76	8.95	36.65	37.46	16.98	25.93	25.87	27.53	21.54	22.26	4.05
		R	1.14	1.03	16.18	2.41	2.33	12.94	5.76	5.71	12.33	2.07	2.00	10.62	88.62	88.93	47.93

(c)   In the urban working population, a majority of total and male workers in all the 11 districts are found in the semi-skilled group. A majority of this semi-skilled workers are found concentrated in carpenters, mechanics and other related workers, tailors, weavers and merchants and other technical salesmen, transport workers also are found in a large number. Most of these occupations are ancillary to agriculture. Majority of female urban workers are found in the professional group, in all the 11 districts, because they are mostly related to tertiary sector. The second largest concentration can be found in the unskilled group for both male and female as well as total workers in all the 11 districts of the Punjab State. It is so because of the considerable number of food processing workers, construction workers etc.

(d)   A considerably large proportion of the total male and female rural workers are found in the agricultural group of occupations, since this is the main activity in rural areas. The second largest concentration of total and male rural workers can be found in the semi-skilled group. This can be explained by the fact that most of the agricultural impliments of Punjab are modern and to maintain them they need large number of carpenters and mechanics. Female rural workers are found in the professional group mostly in the specific occupations like teachers and to a little extent as doctors and other medical personnel.

TABLE NO. 3.5

DISTRIBUTION OF TOTAL WORK FORCE — PUNJAB

		Profess tional	Skilled	Semi- skilled	Un skilled	Agricultural workers
	PUNJAB	2.66	7.66	15.59	10.16	63.92
1.	GURUDASPUR	2.68	9.44	14.89	13.03	59.95
2.	AMRITSAR	2.51	8.12	20.36	11.93	57.07
3.	FEROZEPUR	2.17	4.19	11.49	7.01	75.14
4.	LUDHIANA	3.48	12.03	21.21	11.87	51.42
5.	JULLUDUR	3.45	11.42	20.10	13.39	51.64
6.	KAPURTHALA	2.73	8.04	15.81	11.38	62.04
7.	HOSHIARPUR	3.13	10.10	14.46	10.19	62.22
8.	ROPAR	3.11	7.23	15.26	10.98	63.42
9.	PATIALA	2.83	7.12	14.21	11.02	64.82
10.	SANGRUR	1.92	4.91	11.57	6.98	74.61
11.	BHATINDA	2.02	3.70	11.21	6.27	76.80

(e)   On the whole very few male and total workers both
in urban and rural areas are engaged in the professional
group of occupations.

The Table No. 3.5 presents the district occupational
structure along with the State structure. Taking the State
figures in each of the five occupational groups as an
average, comparison of the occupational groups in each
district with the corresponding State figure is done.

For the convenience of analysing the Table No. 3.5
we have divided the districts into two groups. One, group
consists of those districts which are having a lower value
than the corresponding average of the State. The other
group includes all those districts which are having a higher
value than the corresponding State average. We proceed to
analyse this table according to occupational groups.

Professional group: In this there are 4 districts namely,
Amritsar, Ferozepur, Sangrur and Bhatinda showing a lower
proportion of workers in professional group than the State
average. The remaining seven districts are above the average
figure. All the above four districts are characterized by
a low proportion of workers in secondary and tertiary sector,
low levels of literacy rates when compared to the remaining
seven districts. The only exception to this is Amritsar.

Skilled group: Five districts namely, Ferozepur, Ropar
Patiala, Sangrur and Bhatinda are marked with a lower
proportion of workers in this group than the State average.
This can be explained by the fact that these districts
have a low secondary sector workers, with small size of
industrial establishments both household and non-household .
The remaining six districts namely Gurdaspur, Amritsar,
Ludhiana, Jullundur, Kapurthala and Hoshiarpur are found
to have a larger proportion of their work-force engaged
in the secondary sector and also in tertiary sector where
occupations are more of skilled nature.

Semi-skilled group: Four districts Amritsar, Ludhiana,
Jullundur, and Kapurthala are having a larger proportion of
their work-force in this group than that of the State.
All these districts are marked with a relatively higher
urban population, secondary and tertiary sector workers and
a higher literacy rates.   The remaining seven districts
are marked by a smaller secondary sector coupled with smaller
number of household industries explains the point.

Unskilled group: Only three districts namely, Ferozepur,
Sangrur and Bhatinda are below the State average point.
These three districts have small urban population, small
proportion of workers in secondary and tertiary sector have
also small employment avenues.   The remaining eight districts
above the State average of 10.16% have large number of their

workforce engaged in construction labour, and other
unskilled occupations.

Agricultural group: In this seven districts, Gurdaspur,
Amritsar, Ludhiana, Jullundur, Kapurthala, Hoshiarpur,
and Ropar are below the State average of 63.92%. All these
districts are generally marked with higher productivity
per acre and large urban population and higher literacy
rates. These districts are agriculturally developed
districts where workers from this sector get relieved and
join in other secondary and tertiary sector as evident
from their proportion to total workforce. The remaining
4 districts are relatively less developed and so one finds
a large concentration of workers in agriculture.

Occupational Differentiation: Punjab

What is meant by occupational differentiation by
sex and how to calculate the corresponding index has
already been explained in the previous part of this Chapter.
So, here the results of this index are presented for
consideration.

A careful glance through the Table No. 3.6 brings
out the following points:

(a)   Professional group of occupation is found to be
over-represented by female labour force in all the eleven
districts. Here over-representation does not mean the

VALUES OF INDEX FOR OCCUPATIONAL DIFFERENTIATION - PUNJAB

	Districts	Profess-ional	Skilled	Semi skilled	Un skilled	Agricultural workers
1.	GURDASPUR	.085	.983	1.036	.882	1.566
2.	AMRITSAR	.091	.792	1.324	.660	1.543
3.	FEROZEPUR	.088	.714	1.056	.648	1.396
4.	LUDHIANA	.111	.815	1.148	.853	1.755
5.	JULLUNDUR	.113	1.236	1.149	.735	1.588
6.	KAPURTHALA	.079	.973	1.215	.660	1.681
7.	HOSHIARPUR	.094	1.003	1.191	.090	1.523
8.	ROPAR	.136	.647	1.364	.686	1.486
9.	PATIALA	.117	.530	1.151	.607	1.697
10.	SANGRUR	.089	.477	.966	.440	1.661
11.	BHATINDA	.104	.500	.859	.474	1.517
	PUNJAB	.097	.773	1.122	.671	1.575

absolute size of workers but to the proportion of workers engaged in that occupational groups to the respective total workers.

(b)   In the skilled group of occupation also female workers are over represented in all but two districts. Those two districts - Hoshiarpur and Jullundar are marked with a relative over representation of male workers.

(c)   The group of semi-skilled workers in general is marked by the over representation of male workers. It is because many of the semi-skilled occupations like mechanics, carpenters etc. are male oriented and the agriculturally developed Punjab's economy needs more of such occupations as ancillary to agriculture development. The few exceptions to the observation are Sangrur and Bhatinda districts where this group register a relative female over representation. It could be because of the large use of household industries and more over the size of female workforce is smaller.

(d)   Unskilled group of workers are also relatively female dominated in all the eleven districts.

(e)   The group of agricultural workers registers a strong male over representation in all the eleven districts.

Comparison of Occupational Structures of Karnataka and Punjab States (District Level)

Occupational structure at district level of the Karnataka and Punjab States have been analysed at some length

TABLE - 3.7

COMPARISON OF SKILL LEVEL OCCUPATIONAL STRUCTURE(AT DISTRICT LEVEL) IN THE STATES OF KARNATAKA AND PUNJAB

Groups of occupations	Names of the districts which are having a major proportion of workers in a particular group								
	Total			Urban			Rural		
	P	M	F	P	M	F	P	M	F
1. Professional	-	-	-	-	-	-	-	-	-
2. Skilled	-	-	-	-	-	-	-	-	-
3. Semi skilled	-	-	-	1. Bangalore 2. Belgaum 3. Bider 4. Bijapur 5. Chitradurg 6. Dharwar 7. Gulbarga 8. Hassan 9. Kolar 10. Mysore 11. N.Kanara 12. S.Kanara 13. Tumkur	1. Bengalore 2. Belgaum 3. Bider 4. Bijapur 5. Chickman galore 6. Chitradurg 7. Dharwar 8. Gulbarga 9. Hassan 10. Kolar 11. Mysore 12. N.Kanara 13. Shimoga 14. S.Kanara 15. Tumkur	1. Bengalore 2. Belgaum 3. Bider 4. Bijapur 5. Gulberga 6. S.Kanara 7. Tumkur			

TABLE - 3.7 (Cont)

Groups of occupations	Names of the districts which are having a major proportion of workers in a particular group								
	Total			Urban			Rural		
	P	M	F	P	M	F	P	M	F
4. Unskilled	-	-	-	1. Chick mangalore 2. Coorg 3. Shimoga	2. Coorg 2. Raichur	1. Chikman galore 2. Chitradurg 3. Hassan 4. Mysore 5. N. Kanara 6. Shimoga			
5. Agricultural workers	All the 19 distr icts	All the 19 distr itcs	All the 19 dis tricts	1. Bellary 2. Mandya 3. Raichur	1. Bellary 2. Mandya	1. Bellary 2. Dharwar 3. Coorg 4. Kolar 5. Mandya 6. Raichur	All the 19 distr icts	All the 19 dis tricts	All the 19 dis tricts

Groups of occupations	Names of the districts which are having a major proportion of workers in a particular group								
	Total			Urban			Rural		
	P	M	F	P	M	F	P	M	F
1. Professional	-	-	All the 11 districts	-	-	All the 11 districts	-	-	1. Ludhiana 2. Kapurthala 3. Hoshiarpur
2. Skilled	-	-	-	-	-	-	-	-	1. Patiala 2. Sangrur
3. Semi skilled	-	-	-	All the 11 districts	All the 11 districts	-	-	-	-
4. Unskilled	-	-	-	-	-	-	-	-	-
5. Agricultural workers	All the 11 districts	All the 11 districts	-	-	-	-	All the 11 districts	All the 11 districts	1. Gurdaspur 2. Amritsar 3. Ferozpur 4. Jullondur 5. Ropar 6. Bhatinda

in the two proceeding parts of the Chapter. In this part
of the Chapter it is being attempted to make some important
comparisons between the two States.

Table 3.7 clearly brings out the comparison of
levels of skills of occupational workers at district level
in both the States. The comparison is done at all the
three levels namely total, rural and urban area-wise. For
the sake of convenience in analysing the said table, total
districts will be discussed first and then rural and urban
areas of each district follows. The following points are
brought out from this table.

Total Area:

(a)   In Karnataka a majority of total workers in all the
districts belong to the agricultural group of occupations.
It is because of underdeveloped secondary and tertiary sectors.
More over all the districts have more than 72% of its work-
force in agriculture excepting Bangalore district which is
more or less an urban metropolitan district. The under-
developed nature of agriculture is also evident from the
low productivity per acre in Karnataka. Total, and male
workers of all the eleven districts of Punjab belong to this
group. But when seen the proportion engaged, it is far
smaller than the Karnataka's proportion. It is agriculturally
developed since the productivity per acre is higher, and so
the proportion of workers engaged in this sector is also
less.

(b)   A majority of female workers in all the districts
of Punjab belong to the highest category of skill group
namely, professional group of occupation. In all the
districts of Karnataka a major portion of the female labour
force is concentrated in the agricultural group of
occupations.

(e)   Not even a single district in the Karnataka or Punjab
State is having a majority of its work force engaged either
in skilled or in professional group.

Rural Area

All the workers in the rural areas of the district
of Karnataka state are concentrated in agricultural group
of occupations. Only male and total rural workers in all
the elven districts of Punjab State are engaged mostly in
the group of agricultural occupations. Only in six districts
rural female labour force is engaged in the same group of
occupation as their male counterparts. Of the remaining 5
districts, Ludhiana, Kapurthala and Hoshiarpur's rural
female workers are concentrated in the professional group
especially in the group of teachers while in Patiala and
Sangrur districts rural female workers are engaged mostly
in skilled group. In that group also they are found to be
concentrated more in the occupations like metal processing,
tool making and also in nursing and other related medical
and health technicians.

Urban Areas

(a)   Most of the urban male and total labour force in all the elven districts of Punjab are concentrated in the semi-skilled group of occupations. A very large proportion of the urban female labour force is concentrated in the professional group.

(b)   In the 13 districts of the 19 Karnataka districts, total urban labour force is concentrated in the semi-skilled group of occupations. 15 of the 19 districts urban male labour force and 7 of the 19 districts female urban labour force is concentmated in the semi-skilled groups.

This in general gives an impression that both male ane female workers in all the districts of Punjab are relatively more skilled in nature than those of the Karnataka State.

Comparing the occupational differentiation index values between the two States:

State	Profess-ional	Skilled	Semi-skilled	Unskilled	Agricultural workers
Karnataka	1,078	1,530	1,112	1,100	0.946
Punjab	0,097	0,773	1,122	0,671	1.575

Onn finds that while almost all the occupational groups are being dominated by males in the Karnataka, majority

of the groups are being over represented by the female labour force in the Punjab State. In Karnataka only the agricultural group is being dominated by females while the same group is being dominated by male workers in Punjab. Semi-skilled group of occupation in both the States are marked by a relative over representation of male workers.

CHAPTER IV

LEVELS OF ECONOMIC DEVELOPMENT

India is a conglomeration of various religions, cultures, languages etc. So, in a country like this where population is divided in various linguistic groups, where natural resources and population are not spread evenly over space, regional disparities in levels of development will exist. A study of these disparities in fact lured many social scientists from time to time. This Chapter is devoted to workout the levels of economic development in the states of Karnataka and Punjab. So that the occupational structure of these states can be correlated to various levels of development.

To find out the levels of economic development in the States of Karnataka and Punjab, seventeen variables at the district level have been compiled. These variables mainly represent three groups namely demographic, economic and infrastructural.

Demographic Variables

In this group there are four variables. First of these four variables is density measured in terms of number of persons per sq. km. This gives a fair idea as to how population is spread out over space. Usually more people flock to the relatively prosperous/fertile

areas since it provides them with better employment
chances. In this way this is related to economic develop-
ment and used as one of the variables to measure it. The
second variable is population growth rate. A high
population growth rate means a high level of needed
investment to achieve a required per capita output and
income. It has also got its effect on economic development.

Third of these four demographic variables is Sex
Ratio. The conventional sex ratio measures the number of
females per 1000 males. But in this study the inverse of
this conventional sex ratio is taken to facilitates further
calculations. Moreover, this is generally accepted as
an indicator of migration,[1] Last of the four demographic
variables is proportion of urban population to the total
population. The process of economic development initiates
the transfer of working force from agricultural and
traditional oriented economy to a more developed secondary
and tertiary sector economy. The people hitherto disguisedly
unemployed in the traditional and agricultural sector get
relieved from that as more and more employment opportunities
unfold in the developing secondary and tertiary sectors.

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1.   Asok Mitra (1961), Levels of Regional Development
      in India, Part I - A(i) Vol. 1, Census of India,
      1961, p. 12.

These sectors are mostly service oriented and urban in character. The proportion of urban population measures in a way a regions development so, it is taken as one of the variables to measure economic development.

Economic Variables

In this group are included seven variables. First of these seven variables is <u>economically active population</u>. Relation of economically active population to economic development of a region has been proved by many social scientists. Here it is measured as a reciprocal to augment calculations difficulties. Second and third variables of these seven economic variables are '<u>proportion of workers engaged in the secondary sector</u>' and that engaged in the '<u>tertiary sector</u>'. It is usually observed that the process of economic development tends to cause a shift of workers from the agrarian sector of an economy towards the secondary and tertiary sectors. How far a region has progressed towards the goal of economic development can be measured from these proportions. Moreover, the process of economic development makes the production more commercial. As a result traditional household industries which use mainly family members for labour give way to hired labour and to small and large scale industries, where production is much more impersonalised and commercial.

So, the proportion of the non-household industries is taken as one of the variables to measure the economic development.

The total cultivated area keeps on increasing to feed the increasing population. This coupled with the availability of water in adequate quantities and at the right time is one of the basic determinants of agricultural productivity in the State. So the proportion of total cultivated area and the proportion of irrigated area are also taken besides the productivity per acre as some of the variables to measure economic development.

Infrastructural Variables

Six of the seventeen variables taken to measure economic development belong to this sub group. First in this sub group is proportion of literate population to the total population. It has been proved its positive relation to economic development in terms of more advanced technical know how. One of the basic requirements for a speedy economic progress is overhead facilities which include the transport and communication services. To measure this important aspect two variables namely 'road density' measured in terms of the length of the (surfaced) roads per 100 sq. km. and number of post offices per 100 sq. km. are taken. Another aspect of economic development is clear by the state of physical health of the population. To measure this aspect

variables 'number of medical institutions per 100 sq. km. of rural area' and 'number of hospital beds available per 10,000 urban population' are taken.

Sixth variable of this sub group is 'proportion of electrified villages'. Cheap electric power is one of the most important prerequisites for economic development. According to David E. Lilianthal "electric power in the hands of people is a modern measure of people's command over their productiveness, their opportunities for industrialization (and) their potentialities for the future".[2] Rural electrification besides increasing the wlfare of the people also adds the spur to the growth of small scale industries, cottage industries and increases the agricultural productivity also.

Methodology

There are various methods to identify the level of economic development of a region. Some are simple ranking methods where the arithmatic distance of the value of a variable of a region A is measured with that of region B. In this method some people also use weights depending on the appropriate criteria.[3] Some people go for the more complex factor analysis.

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2. David E. Lilianthal 'TVA - Democracy on the March' Pocket Books, N.Y. (1945), p. 18.

3. Dr Joseph E. Schwartzberg, op. cit.

Recently many of the researchers are using one particular analysis 'Principle Component Analysis'. This is of great help especially in developmental studies because of its greater ability in 'describing a complex spatial structure of a large number of socio-economic and other variables through some smaller number of underlying dimensions.[4] Usually these underlying dimensions are extracted from a large number of unobservable variables on the basis of inter-correlations, among them. This principle component analysis which is in fact a major improvement on factor analysis is designed in such a way that it condenses the large number of variables into a few principle components which as a matter of principle retain the maximum amount of discriptive ability which the previous large set of variables were having. That is, this analysis condences the large number of variables depending upon some general characteristics into a few components without loosing, their capacity to explain the developmental process. 'Principle Component Analysis essentially requires an orthogonal transformation of a set of inter related structural variables into a set of independent variables'.[5]

In finding out the levels of economic development in this study, it has used a method which is a principle component

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4.   Aslam Mahmood, 'Statistical Methods in Geographical Studies', Chapter 11, p. 153.

5.   Aslam Mahmood, op. cit., p. 154.

analysis. This is called Modified Principle Component Analysis (hereonwards referred as MPCA). The conventional Principle Component Analysis gives the correlation matrix and thus gives the factor scores which for some variables may be negative.[6] In developmental studies one comes across variables which are hindering the developmental procéss. But if the factor scoro/load is negative, it does not explain how a variable or for that matter a group of variables can negatively effect the process of economic development. To rule out such 'inexplicabilities' in the following analysis, MPCA is used. It first standardizes the variables and then constructs a distance matrix among the variables. The factor scores which one get through this method can only be positive. The least score one can get in this method is zero, and so the trouble of explaining how a set of variables is inversely correlated or hindering the process of development is taken care of.

Another reason for using this Modified Principle Component Analysis is that in the study it is of interest to know the district scores as measured in terms of the above said variables. So that districts could be grouped according to the various levels of development. According to Boudhayan

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6. There are many studies in which P.C.A. gives a negative factor scores to some of the variables. For example see the worked out example given in the Aslam Mahmood's Statistical Method in Geographical Studies, pp. 155-166.

Chattopadhyay and Moonis Raza 'The lacuna of absence of weights for the variables, or the use of equal weights is sought to be corrected by the more rigorous PCA, which, together with discriminant function yields a more rigorous system of composite classificatory indices. Statistically the PCA explicitly takes care of the problem of multi-colleniarity. The method of eventually one of the orthogonalization of a whole set of variables into mutually independent components, total set of variables, the variables in the sub set moving together.[7]

Analysis of the Results

Analysing the overall economic development or the lack of it for the two states Karnataka and Punjab with all the seventeen variables is too complex. To reduce this complexity, it is attempted to develop the analysis sectorwise taking each of the three groups of variables as a specific sector. By doing so it plans to get sectorwise picture of these two states and also by combining these three sectors one gets the overall economic development picture for both the states.

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7.   Boudhayan Chattopadhyay and Moonis Raza 'Regional
      Development: Analytical Framework and Indicators'
      Indian Journal of Regional Science, vol. vii,
      no. 1, 1975, pp. 11-34.

Demographic Group

A region's demographic structure is one of the most important aspect of a region's overall economic development. Economic significance of population as a factor of production comprises of two aspects - its role as a consumer and also as a producer. When the number of people increases, consumption requirements increases correspondingly and the extent to which this growth in population contributes to production depends not only on its size but also on its organisation, avaiability of resources and techniques of production as well.

Using the four demographic indicators in the MPCA method it came out with composite demographic scores for each of the 30 districts. (The basic data of these 4 variables were given in the appendix.).

The thirty districts in this study were made into 4 groups ddpending on their respective comprhensive demographic scores with the help of quartile method. These groups are:

1. High group

2. Moderately high group

3. Low group

4. Very low group.

These groups are made in such a way that the first two groups comprise 'above average group' while the last two groups comprise 'below average group'.

TABLE : 4.1

DEMOGRAPHIC GROUP OF VARIABLES

S. No.	Name of the District	Composite Score	State
I. Highly Developed Districts (Scores above 2.444).			
1.	Bangalore	3.580	Karnataka
2.	Ludhiana	2.866	Punjab
3.	Jullundur	2.682	Punjab
4.	Amritsar	2.529	Punjab
II. Moderately Developed Group of districts (Scores between 1.999 - 2.443)			
5.	Gurdaspur	2.378	Punjab
6.	Patiala	2.364	Punjab
7.	Kapurthala	2.33	Punjab
8.	Dharwar	2.061	Karnataka
9.	Mysore	2.021	Karnataka
III. Relatively less Developed Group of districts (Scores between 1.998 to 1.555)			
10.	Sangrur	1.997	Punjab
11.	South Kanara	1.992	Karnataka
12.	Mandya	1.970	Karnataka

S. No	Name of the District	Composite Score	State
13.	Bhatinda	1.945	Punjab
14.	Shimoga	1.930	Karnataka
15.	Hoshiarpur	1.898	Punjab
16.	Belgaum	1.875	Karnataka
17.	Ropar	1.862	Punjab
18.	Bellary	1.860	Karnataka
19.	Chitradurga	1.857	Karnataka
20.	Ferozepur	1.833	Punjab
21.	Kolar	1.781	Karnataka
22.	Bidar	1.781	Karnataka
23.	Raichur	1.673	Karnataka
24.	Hassan	1.668	Karnataka
25.	Bijapur	1.659	Karnataka
26.	Gulbarga	1.652	Karnataka
27.	North Kanara	1.577	Karnataka
28.	Chikmagalur	1.568	Karnataka
29.	IV Least Developed Group of Districts (Scores below 1.554)		
29.	Tumkur	1.529	Karnataka
30.	Coorg	1.437	Karnataka

All the thirty districts with their respective comprehensive demographic scores and devided into the four groups are presented in the table no. 4.1.

Referring to appendix along with the table no. 4.1 one finds that demographically speaking all the four districts in the first group have got some similiarities. In all these four districts density of population is high and at the same time urbanization is also considerably high. Even the sex ratio defined as number of males per 1000 females is high making it more biased towards male population and immigration. In the second group there are 5 districts of which 3 belong to Punjab and two belong to Karnataka. The same information is given in a more precise form in the table no. 4.2.

TABLE 4.2

DISTRIBUTION OF DISTRICTS ACCORDING TO COMPOSITE DEMOGRAPHIC SCORE

State	High	Moderate	Low	Very low	Total
Karnataka	1	2	14	2	19
Punjab	3	3	5	-	11
Total	4	5	19	2	30

DISTRIBUTION OF
DEMOGRAPHIC VARIABLES
70-71
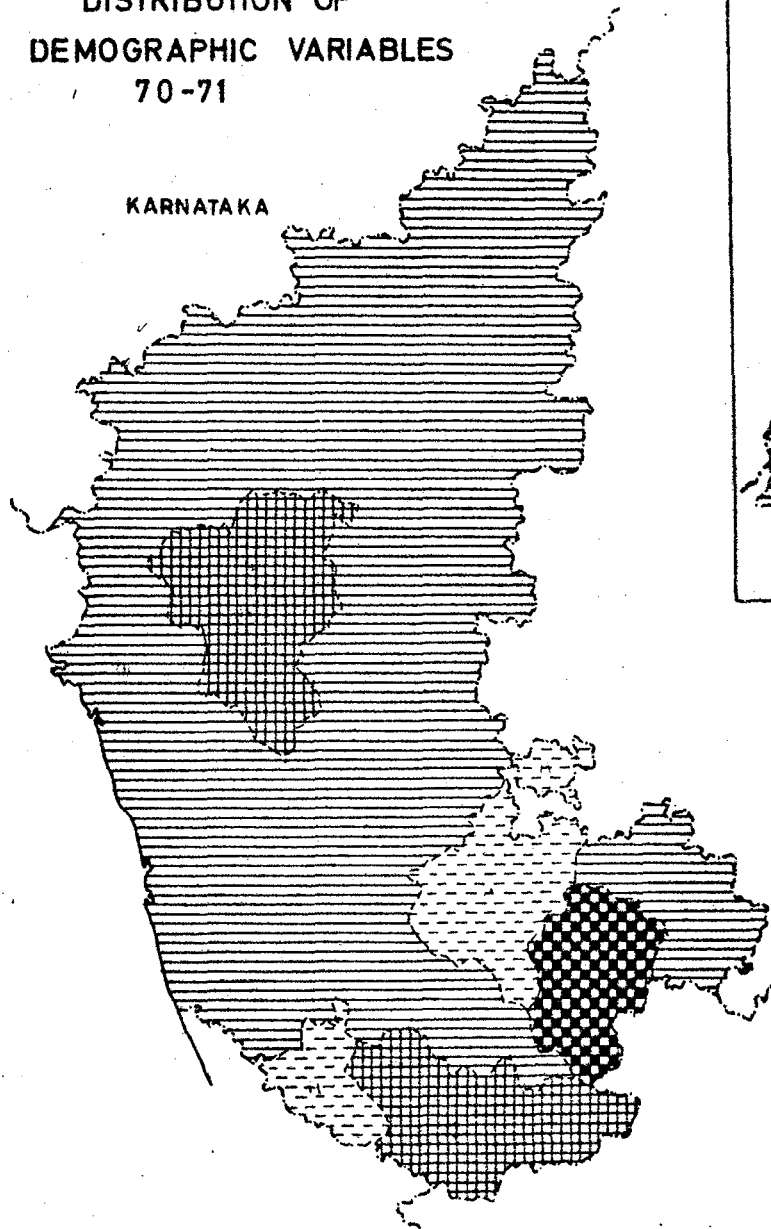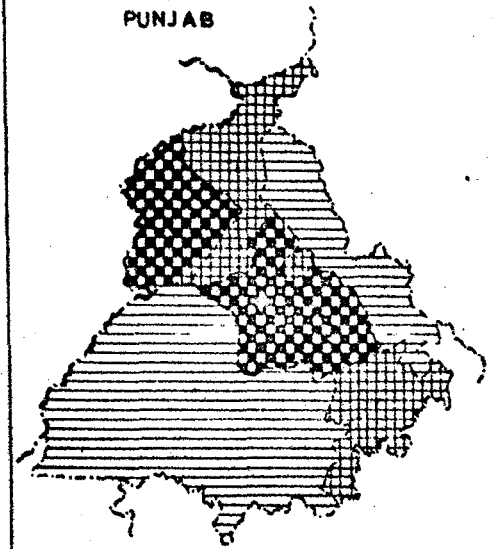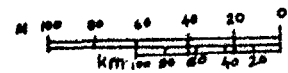
KARNATAKA

PUNJAB

INDEX

above   2.444 ____

1.999 to 2.443 ____

1.555 to 1.998 ____

below   1.554 ____

MAP   NO.1

Map No. 1 presented here gives a view of how these high, low, etc. districts are situated over space. In Karnataka only Bangalore district belongs to the high group. In Punjab, Amritsar, Ludhiana and Jullundur formed a cluster of 'high' districts followed by 'moderate' districts. In a way all the above average districts in Punjab form a big cluster. In Karnataka the two 'moderate' districts Mysore and Dharwar are situated at a distance from each other and so there was no cluster. But all the 'low' and 'very low' districts in Karnataka formed two district group.

Economic Variables Group

A region's economic development is mostly talked in terms of its agricultural and industrial production, division of labour and its distribution of industries overspace. In this group are included seven variables which were already discussed earlier. The data of these seven variables for all the 30 districts in this study are presented in the form of a table in the appendix. Using these seven variables data in the MPCA we got the composite economic scores for each of these districts which were divided to form 4 groups basing as the magnitudes of its score. These groups along with the districts and their respective comprehensive economic scores were given in the table no. 4.3.

TABLE NO: 4.3

ECONOMIC GROUP OF VARIABLES

S. No.	Name of the District	Composite Score	State
I. Highly Developed Group of Districts (Scores above 3.411)			
1.	Ludhiana	4.353	Punjab
2.	Jullundur	4.114	Punjab
3.	Amritsar	4.004	Punjab
4.	Kapurthala	3.525	Punjab
5.	Sangrur	3.512	Punjab
6.	Patiala	3.460	Punjab
II. (Moderately Developed group of Districts (Scores ranging between 2.641 - 3.410).			
7.	Gurdaspur	3.325	Punjab
8.	Ferozepur	3.308	Punjab
9.	Bhatinda	3.267	Punjab
10.	South Kanara	3.130	Karnataka
11.	Ropar	2.966	Punjab
12.	Bangalore	2.918	Karnataka
13.	Hoshiarpur	2.774	Punjab
III. (Relatively) less developed group of districts: (Scores ranging between 1.872 - 2.640)			
14.	Shimoga	2.482	Karnataka
15.	Mandya	2.346	Karnataka
16.	Belgaum	2.208	Karnataka

S. No.	Name of the District	Composite Score	State
17.	Dharwar	2.188	Karnataka
18.	Mysore	2.171	Karnataka
19.	Bijapur	2.098	Karnataka
20.	North Kanara	2.088	Karnataka
21.	Chitradurga	2.073	Karnataka
22.	Tumkur	1.937	Karnataka
23.	Bidar	1.935	Karnataka
24.	Coorg	1.906	Karnataka
25.	Gulbarga	1.885	Karnataka
26.			
IV.	Least Developed districts (Below 1.871 score)		
26.	Hassan	1.841	Karnataka
27.	Raichur	1.830	Karnataka
28.	Chikmangalur	1.826	Karnataka
29.	Bellary	1.815	Karnataka
30.	Kolar	1.205	Karnataka

TABLE 4.4

DISTRIBUTION OF DISTRICTS ACCORDING TO COMPOSITE
ECONOMIC SCORES

| State	High	Moderate	Low	Very low	Total
Karnataka	-	2	12	5	19
Punjab	6	5	-	-	11
Total	6	7	12	5	30

All the six districts in the 'High' group belong to
Punjab State. All these districts Ludhiana, Jullundur,
Amritsar, Kapurthala, Sangrur and Patiala are marked by a
uniform high agricultural productivity, a phenominon supported
by a large proportion of irrigated land of these six districts.
Patiala with 65% of irrigated land is the lowest while the
highest is almost 92%. These districts are uniformally marked
with a considerable size of secondary sector workers and
number of non-household industries. In the second group
5 of the 'moderate' districts are Punjab's while two belong
to Karnataka. All the 'low' and 'very low' districts belong
to the Karnataka state. All these districts are generally
marked with low reciprocal of economic activity rates, low
irrigated lands, low secondary sectors participation and low
per acre production.

DISTRIBUTION OF ECONOMIC VARIABLES
70-71
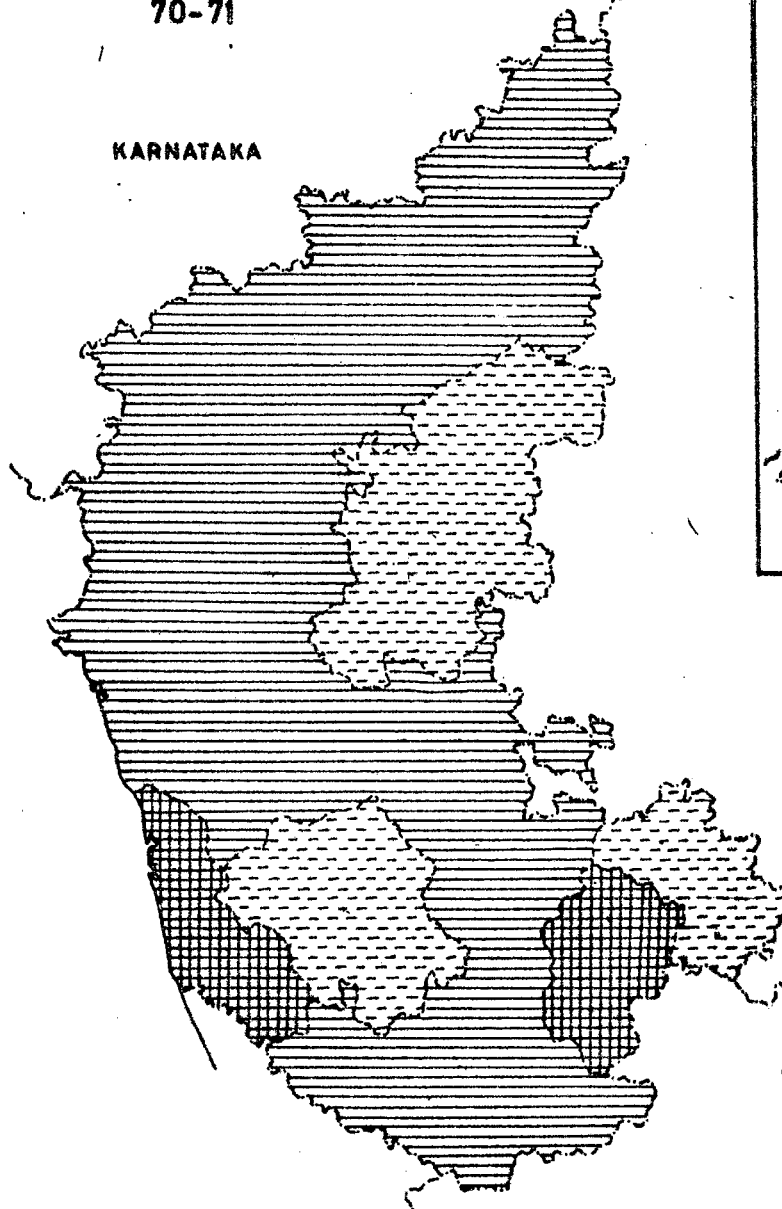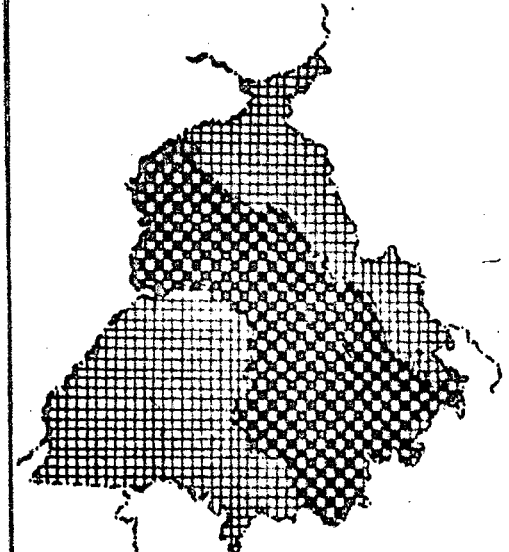
KARNATAKA
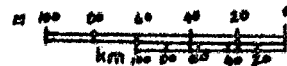
PUNJAB

INDEX

above   3.411 ———
2.641   to   3.410 ———
1.872   to   2.640 ———
below   1.871 ———

MAP NO. 2

It may be noted from Map No. 2 that:

(1)   all the 'high' districts fall in the state of Punjab.
They all form a big cluster from north-west to south east.
In Karnataka there was not a single district, termed as
'highly' developed.

(2)   5 districts of Punjab - Gurdaspur, Ferozepur, Hoshiarpur,
Ropar and Bhatinda - which are 'Moderate' fall on either side
of the 'high' districts cluster . Geographically speaking
these 'moderate' districts are divided by 'highly developed'
districts.   In Karnataka South Kanara and Bangalore are the
two 'moderate' districts.

(3)   All the 12 'low' districts fall in Karnataka and
formed a distinct cluster.

(4)   The 5 districts which are categorised as 'very low'
are formed in two small clusters of two districts each and
a solitary district of Kolar.

Infrastructural Variables Group

To maintain a high level of economic development it
is but natural to have a well coordinated development of
infrastructural facilities. Because of this the study of
overall economic development of a region can never be complete
without properly considering the infrastructural development
of that particular region. To measure infrastructure six
variables are taken. One can never say that these six
variables are exhaustive but considering the data constraints

TABLE NO. 4.5

INFRA STRUCTURAL VARIABLES GROUP

S. No.	Name of the District	Composite Score	State
I. Highly Developed Districts (Scores above 3.128)			
1.	Coorg	3.899	Karnataka
2.	Jullundur	3.845	Punjab
3.	South Kanara	3.776	Karnataka
4.	Amritsar	3.609	Punjab
5.	Ludhiana	3.412	Punjab
6.	Bangalore	3.192	Karnataka
7.	Hoshiarpur	3.145	Punjab
II. More Developed Group of Districts. (Scores between 2.352 – 3.127)			
8.	Mandya	3.076	Karnataka
9.	Gurdaspur	3.035	Punjab
10.	Kapurthala	2.976	Punjab
11.	Ropar	2.070	Punjab
12.	Kolar	2.625	Karnataka
13.	Patiala	2.530	Punjab
III. Relatively Less Developed Districts (Score between 1.573 – 2.351)			
14.	Mysore	2.331	Karnataka
15.	Hassan	2.268	Karnataka
16.	Tumkur	2.241	Karnataka

S. No.	Name of the District	Composite Score	State
17.	Chikmagalur	2.229	Karnataka
18.	Shimoga	2.212	Karnataka
19.	Belgaum	2.113	Karnataka
20.	Dharwar	2.109	Karnataka
21.	Chitradurga	2.059	Karnataka
22.	Bellary	1.969	Karnataka
23.	Sangrur	1.585	Punjab
24.	North Kanara	1.912	Karnataka
25.	Ferozepur	1.807	Punjab
26.	Bhatinda	1.585	Punjab

IV. Least Developed Districts (Below 1.572 score)

S. No.	Name of the District	Composite Score	State
27.	Bijapur	1.545	Karnataka
28.	Bidar	1.457	Karnataka
29.	Gulbarga	1.207	Karnataka
30.	Raichur	1.173	Karnataka

they do represent majority of infrastructural indicators.

The necessary data for all the 30 districts which was used in the MPCA to arrive at the comprehensive infrastructural scores are given in appendix. These comprehensive scores were divided into 4 groups depending on their magnitude as was done in the two previous cases. The table 4.6 gives the 4 groups of districts with their respective comprehensive infrastructural scores.

TABLE 4.6

DISTRIBUTION OF DISTRICTS ACCORDING TO THE COMPOSITE INFRASTRUCTURAL SCORES

State	High	Moderate	Low	Very low	Total
Karnataka	3	2	10	4	19
Punjab	4	4	3	-	11
Total	7	6	13	4	30

The table 4.6 gives the state-wise distribution of various 'levels' of districts. According to this in Karnataka only 5 districts are above average while 14 districts are below average in infrastructural attainment. In Punjab of the 11 districts 8 are above average and only 3 districts are below average in infrastructural facilities.

DISTRIBUTION OF INFRASTRUCTURE VARIABLES
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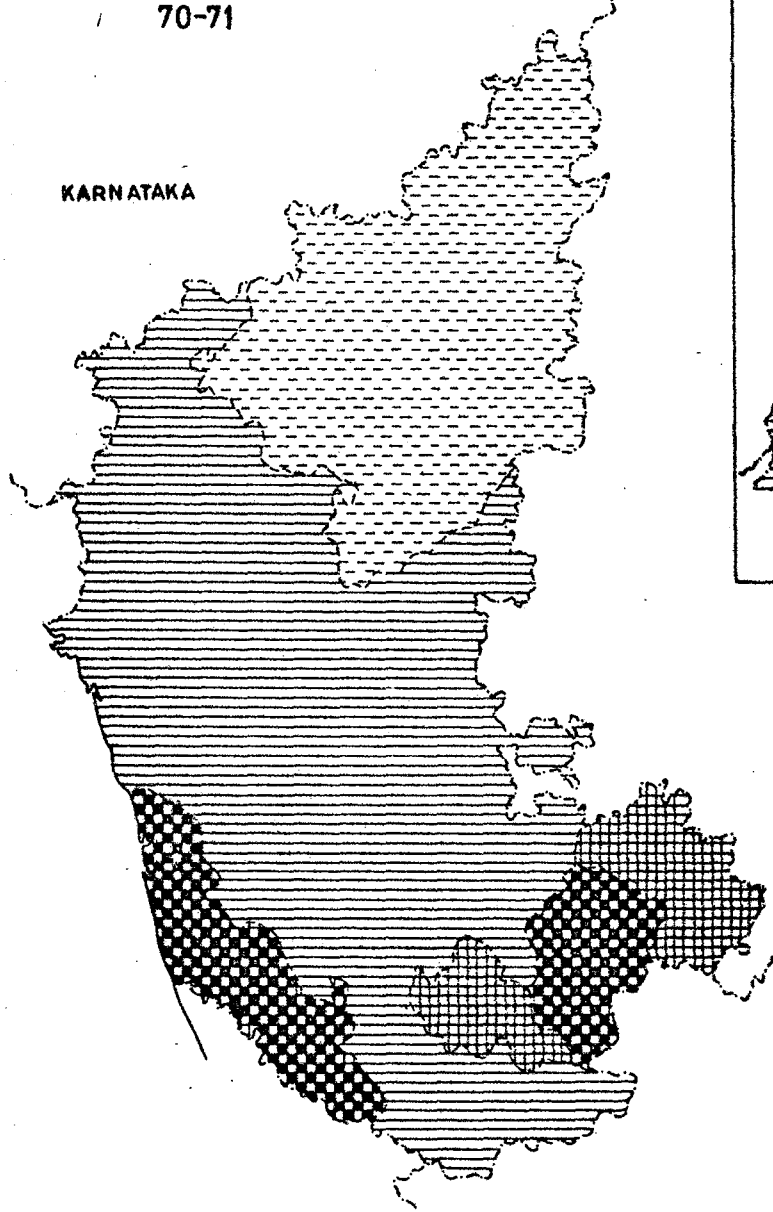
PUNJAB
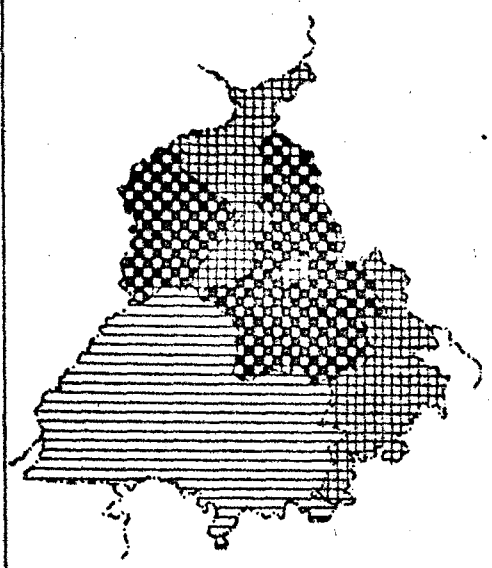
INDEX

above   3.128 ————

2.352 to 3.127 ————

1.573 to 2.351 ————

below   1.572 ————
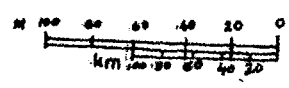
MAP   NO.3

Map No. 3 gives a regional picture of the distribution of these districts. In Karnataka, South Kanara and Coorg form a two district cluster of 'high' group districts while another 'high' district Bangalore gets singled out in the Southeast of Karnataka. This was surrounded by Kolar in the northeast and Mandya in the South-west the two 'moderate' districts. In Punjab Jullundur, Amritsar, Ludhiana and Hoshiarpur form a cluster of 'high' districts, surrounded by 'moderate' districts in the north, south-east and south. Similarly, all the 'low districts of Punjab form a cluster too. In Karnataka it can be seen that all the 10 'low' and the 4 'very low' districts form a big cluster. It is interesting to observe that all the 'very low' districts are situated at the northern extreme of the state.

Overall Economic Development

It is no doubt important to understand sectoral patterns of regional development but it is done only as a means to understand the pattern of overall development of a region. So, now it is tried to combine all the three groups which were already analysed to derive a comprehensive picture. These overall developmental ratings presented in the table no. 4.7 are arrived at with the help of all the 17 variables.

TABLE NO. 4.7

OVERALL DEVELOPMENTAL RATINGS

S. No.	Name of the District	Composite Score	State
I.	**Highly Developed District (Above 5.126 score)**		
1.	Jullundur	6.263	Punjab
2.	Ludhiana	6.235	Punjab
3.	Amritsar	5.947	Punjab
4.	Bangalore	5.482	Karnataka
5.	Kapurthala	5.134	Punjab
II.	**More developed Districts (between 4.118-5.125)**		
6.	Gurdaspur	5.118	Punjab
7.	South Kanara	4.913	Karnataka
8.	Patiala	4.869	Punjab
9.	Hoshiarpur	4.606	Punjab
10.	Ropar	4.470	Punjab
11.	Sangrur	4.373	Punjab
12.	Mandya	4.268	Karnataka
13.	Coorg	4.176	Karnataka
III.	**Relatively Less Developed Districts (Between 3.112 - 4.117)**		
14.	Ferozepur	4.079	Punjab
15.	Bhatinda	3.978	Punjab
16.	Shimoga	3.830	Karnataka

S. No.	Name of the District	Composite Score	State
17.	Mysore	3.747	Karnataka
18.	Kolar	3.658	Karnataka
19.	Dharwar	3.654	Karnataka
20.	Belgaum	3.565	Karnataka
21.	Chitradurga	3.454	Karnataka
22.	Hassan	3.333	Karnataka
23.	Tumkur	3.311	Karnataka
24.	Chikmagalur	3.252	Karnataka
25.	Bellary	3.235	Karnataka
26.	North Kanara	3.238	Karnataka
IV.	Least Developed group of Districts (Below 3.111 Score)		
27.	Bijapur	3.067	Karnataka
28.	Bidar	2.936	Karnataka
29.	Gulbarga	2.729	Karnataka
30.	Raichur	2.683	Karnataka

TABLE 4.8

DISTRIBUTION OF DISTRICTS ACCORDING TO THE OVERALL DEVELOPMENTAL RATINGS

State	High	Moderate	Low	Very low	Total
Karnataka	1	3	11	4	19
Punjab	4	5	2	-	11
Total	5	8	13	4	30

This table no. 4.8 clearly says that Karnataka is certainly a less developed state in comparison with Punjab. In Karnataka only four of the 19 districts are developed above average while the rest 15 districts are less developed. Of the 11 districts in Punjab nine are more than moderately developed while only two are less developed.

Map No. 4 represents these 4 levels of overall development picture. This map should be analysed with the help of the previous three maps. In a way this map is only a superimposition of these three maps on one another.

In all the 19 districts in Karnataka only Bangalore district is rated as highly developed. In fact Bangalore district has consistantly figured in the high group in all the 3 groups of variables excepting in the economic group where it was in the 'moderate' class. In Punjab Jullundur,

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above 5.126

4.118 to 5.125

3.112 to 4.117

below 3.111
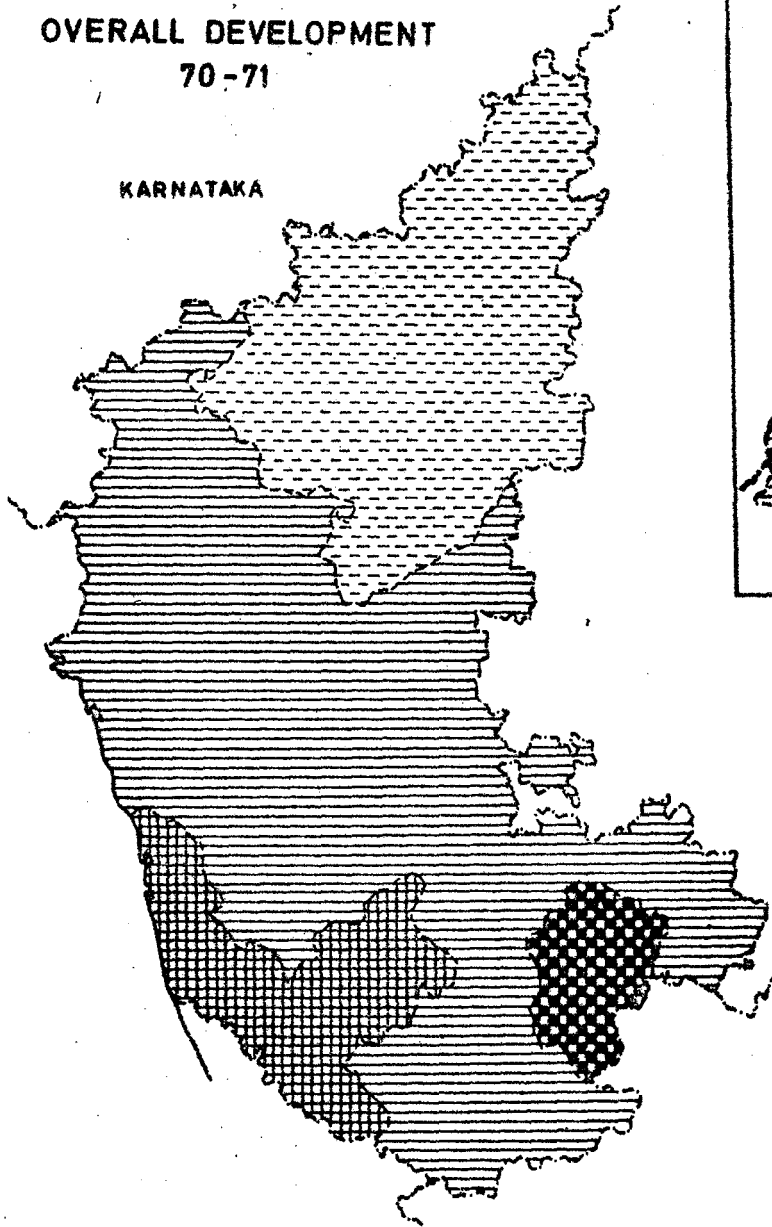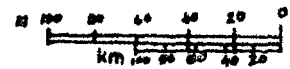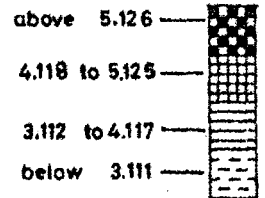
MAP NO. 4

Ludhiana, Amritsar and Kapurthala are formed into a cluster
of highly developed districts. Excepting Kapurthala all the
other three districts are consistantly in the group termed
as, 'high' where as this district figures in economic group
as 'highly' developed while in the rest of the groups it is
in the 'moderate' class.

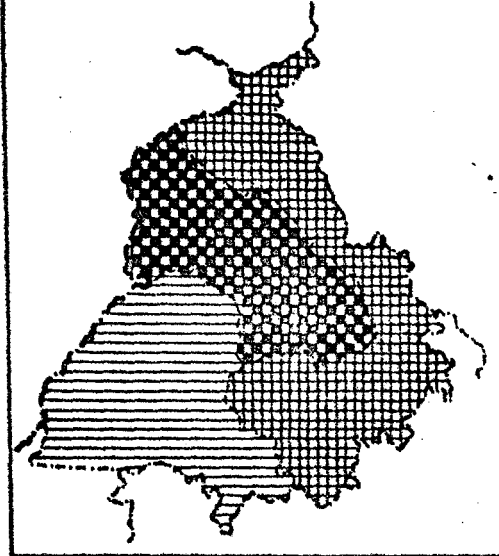Gurdaspur, Patiala, Hoshiarpur, Ropar and Sangrur
figure in the moderately developed group of districts.
Sangrur, Ropar and Hoshiarpur have figured in the 'low' class
in demographic variables group, while the rest of the
districts are in the 'moderate' class. In the economic group
Gurdaspur, Ropar and Hoshiarpur figure in 'moderate' class
while the rest figure in 'high' class. In the infrastructural
group excepting Hoshiarpur all the other districts are in
the'moderate' class while Hoshiarpur figures in the 'high'
group.

In Karnataka one finds that South Kanara and Coorg
forming a cluster and Mandya alone belong to the 'moderately'
developed group of districts in the overall development
score. In the demographic variables' group none of these
three districts are seen in any of the above average group
of districts. For that matter Coorg figured in the 'very low'
class - in this group. In economic variables group only
South Kanara finds itself as a 'moderately' developed district
while Coorg and Mandya figure in the 'low' developed districts.

In the infrastructural group Coorg and South Kanara are found as the 'highly' developed. While Mandya falls in the 'moderate' class of districts.

Coming to the low developed districts group one finds only two districts of Punjab, Ferozepur and Bhatinda along with eleven of Karnataka's districts. In fact those two districts figure in the 'low' class in both the demographic and infrastructure variables group while they figure in the 'moderate' class in the economic variables groups. In Karnataka all the eleven districts figuring in the low level of overall development are found in the same class in the infrastructure group. In demographic group Mysore and Dharwar are found in the 'moderate' class while Tumkur is found in the 'very low' class. Rest of these are in the 'low' class. In economic variables group Kolar, Hassan, Chikmagalur and Bellary are found in the 'very low' category while others were in the 'low' category.

All the 'very low' developed group of districts are represented by the districts of Karnataka. In this group not even a single district from Punjab figures. The four districts that figure in this class are Bijapur, Bidar, Gulbarga and Raichur, the most northern districts of the state. All these four districts are categorized as 'low' only in demographic variables group. In economic variables group only Raichur is listed as 'very low' while the other three are listed as 'low' only.

The preceding analysis clearly brings out that the
state of Punjab is more developed than Karnataka. More over
within the states itself the benefits of development have
not spread evenly over all regions/sub-regions. That is why
one finds some pockets of highly developed districts or
very low developed districts. In both the states the level
of economic prosperity of some areas is higher than that
of some other areas.

CHAPTER   V

RELATION BETWEEN OCCUPATIONAL STRUCTURE AND ECONOMIC DEVELOPMENT

The main idea of this chapter is to find out the relationship of economic development with various skill groups of workers. For this it has already been attempted to see the occuptional structure at the district level alongwith levels of economic development. This chapter deals with correlations between the various skill groups and the groups of demographic variables, economic variables and infrastructural variables and also with the overall economic development index.

Before finding out and analysing the relation between these two sets, it is seen how various skill groups behave at various levels of development. Depending on the overall economic development index, all the thirty districts of this study are grouped into four different groups. They are:

     1. Highly developed districts

     2. Relatively more developed districts

     3. Less developed districts

     4. Least developed districts.

Table No. 5.1 gives the distribution of five skill groups of workers compared to four development groups. All these groups of workers are taken in proportion to the total work force of the respective district groups.

TABLE NO. 5.1

DISTRIBUTION OF LEVELS OF SKILL OF WORKERS IN EACH

LEVEL OF DEVELOPMENT GROUPS

Development groups	Profession al	Skilled	Semi skilled	Un skilled	Agr workers	Total
1. Highly developed	3.27	9.89	21.25	14.79	50.80	100.00
2. Relatively more developed	2.54	6.57	13.04	9.90	67.95	100.00
3. Less developed	2.00	3.35	11.40	8.45	74.80	100.00
4. Least developed	1.52	2.41	11.19	8.22	76.66	100.00

Table 5.1 gives a clear picture about the trends of occupations at various levels of development. The first four skill groups of workers namely professional, skilled, semi-skilled and unskilled show a gradual increase in the proportions as development takes place in a given region. The professional group of workers increases at a slow pace. The highly developed group of districts have almost double the proportion of the professional workers than that of the least developed districts. In the skilled group of workers the difference between the least developed districts and the highly developed districts is more noticeable. Proportionally the skilled group is more than four times higher in highly developed districts than in the least developed districts. In the semi-skilled group, the difference between highly developed districts and the least developed districts narrows down and remains nearly double. In the case of unskilled group of workers, this difference further narrows down. This makes one thing very clear that as a region attains more development, professional, skilled, semi-skilled and unskilled groups of workers as a proportion to the total workforce stand to gain. This gain may be slow, but one can identify it with the help of Table No. 5.1. This table marks a sudden spurt of gain in these four groups as one moves from the more developed districts to the highly developed districts. When it comes to the agricultural group, this group stands to lose as a region attains more and more development. This indicates that the

NO.1
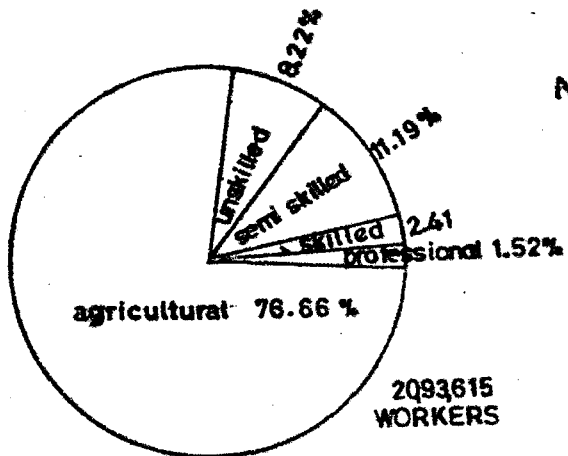
unskilled 8.22%

semi skilled 11.19%

skilled 2.41

professional 1.52%

agricultural 76.66 %

2093,615 WORKERS

LEAST DEVELOPED DISTRICTS

NO. 2

unskilled 8.44

semi skilled 11.40 %

skilled 3.36%

professional 2.00%

agricultural 74.80 %

8490831 WORKERS

LESS DEVELOPED DISTRICTS

NO.3

unskilled 9.90%

semiskilled 13.04 %

skilled 6.57%

professional 2.54%

agriculture 67.95 %

25,68,324 WORKERS

MORE DEVELOPED DISTRICTS

NO.4

unskilled 14.79%

semiskilled 21.25 %

skilled 9.89%

professional 3.27%

agriculture 50.80

2337,571 WORKERS
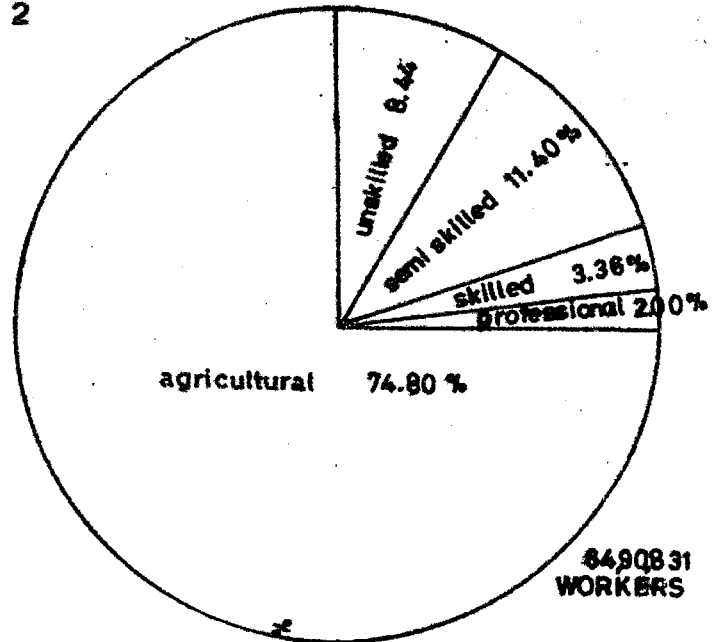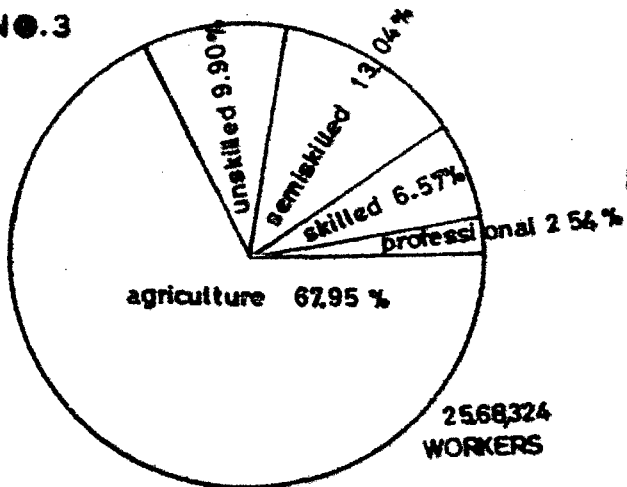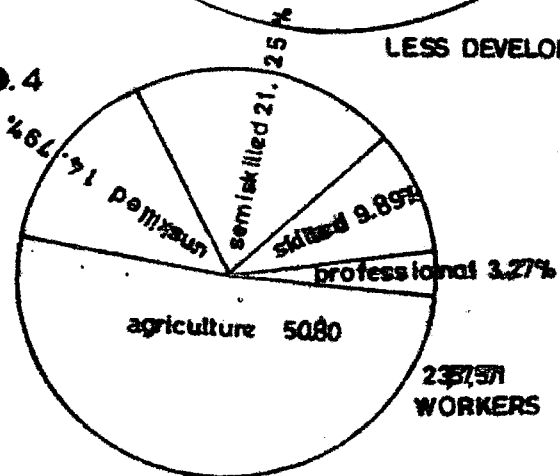
MOST DEVELOPED DISTRICTS

proportion of agricultural workers is inversely related to economic development of a region.

A gradual rise or fall of these groups of occupations over various levels of developmental attainments is clearly brought out by the four pie-diagrams presented here. As one moves from the 'least developed' to the 'highly developed' districts one can find gradual changes that occur in the occupational structure with the development of a region.

Changes in the Distribution of Work Force According to the Levels of Economic Development

The process of economic development brings about a change in the distribution of work force. This point has been illustrated by many social scientists many a time. But most of them have undertaken studies pertaining to industrial categories grouped into primary, secondary and tertiary sectors. However, studies based on occupational groups grouped according to various levels of skills are scanty. So, this section proposes to bring out the distribution patterns of various occupations separately for male and female labour force at different levels of developmental attainments.

This study has grouped 30 districts into four levels of development. This has been discussed in the previous chapter. But in this chapter, for the sake of bringing out clear cut differences in the distribution of workers,

these four levels of development groups have been merged

into two groups namely:

(i)   Relatively Developed Districts (comprising of the
        two groups 'Highly Developed' and 'Relatively More
        Developed' districts)

        a) Bangalore   h) Jullundur

        b) Coorg   i) Kapurthala

        c) Mandya   j) Hoshiarpur

        d) South Kanara   k) Ropar

        e) Gurdaspur   l) Patiala

        f) Amritsar   m) Bhatinda

        g) Ludhiana

(ii)   Less Developed Districts (comprising of the two
        groups namely 'Less Developed' and 'Least
        Developed' districts)

        a) Belgaum   j) Kolar

        b) Bellary   k) Mysore

        c) Bidar   l) North Kanara

        d) Bijapur   m) Raichur

        e) Chikmagalur   n) Shimoga

        f) Chitradurga   o) Tumkur

        g) Dharwar   p) Ferozepur

        h) Gulbarga   q) Bhatinda

        i) Hassan

With a view of presenting an overall picture of labour

force and its distribution in the regions having different

levels of economic development, Table No. 5.2 is presented.

TABLE NO. 5.2

OVERAL   DISTRIBUTION   OF   LABOUR   FORCE

	More Developed Areas		Less Developed Areas	
	M	F	M	F
Work Participation Rates	52.29	6.13	54.87	12.35
Proportion of workers in each skill group to total labour force.				
a. Professional	1.99	0.73	1.60	0.28
b. Skilled	7.26	0.28	2.86	0.20
c. Semi skilled	14.97	1.19	9.66	.33
d. Unskilled	10.53	1.03	7.21	1.38
e. Agricultural	56.92	5.10	61.10	14.38
Proportion of workers to total labour force	91.67	8.33	82.43	17.57

This Table 5.2 gives the details of how total labour force
in each region is distributed over various skill level
groups and how many of them were male and how many of them
were female. (Details of district level data on the same
lines are presented in a tabular form in the appendix).
This also helps one in understanding the proportions of
male and female workers who constitute labour force as a
whole in different regions with different levels of develop-
mental achievements. After critically analysing the Table
5.2 the following points become very much evident:

a)   The difference in the male work force participation
rates between more developed and less developed areas is
not much, though the less developed areas tend to have a
slightly higher rates than that of the more developed areas.

b)   In the less developed areas, women work participation
rates are twice higher than that of their counterparts in
the more developed areas.

c)   The proportion of female workers in the total labour
force in less developed areas is more than twice that of the
female workers as a proportion to the total labour force
in the more developed districts.

d)   In the more developed areas the proportion of male
workers engaged in the groups of professional, skilled,
semi-skilled and unskilled occupations are higher than that
of their respective male workers in the less developed areas.

In the female workers, this sort of trend is visible only in the professional and skilled groups of workers, while in the semi-skilled, unskilled and agricultural groups, female worker proportions in less developed areas are respectively greater than that of their counterparts in the more developed areas.

e)   The proportion of agricultural group of workers both male and female in the less developed areas are greater than that of their counterparts in the more developed areas.

Basing on the above given information, this analysis goes into further minute details and presents the Table No. 5.3 which gives the distribution of male/female labour force separately for 'relatively developed' and 'less developed' districts. This helps in analysing the detailed trends in the above said two groups of districts. A careful glance through this detailed table brings the following points to the fore:

1.   Of the thirteen relatively developed districts, in eleven districts the proportion of female workers in the professional group to total female work force in that district is higher when compared to the proportion of professional group of male workers to the total male work force. Only Mandya and South Kanara districts register that the proportion of male professional group of workers to the total male work force is higher than that of the female workers to the total female work force.

TABLE NO. 5.3.

DISTRIBUTION OF WORKERS IN DEVELOPED AND LESS DEVELOPED DISTRICTS

		FEMALE WORKERS					MALE WORKERS				
		Profe ssional	Skill- ed	Semi- skill- ed	Un skill- ed	Agr workers	Profess -ional	Skilled	Semi- skilled	Un- skiled	Agr worker
1	2	3	4	5	6	7	8	9	10	11	12
a. Relatively Developed Districts:											
1)	Bangalore	8.04	4.21	19.99	18.96	48.80	3.08	11.23	25.11	18.26	42.32
2)	Coorg	2.41	0.88	4.03	11.59	81.09	2.04	4.05	11.16	12.91	69.84
3)	Mandya	1.46	1.69	4.16	7.60	85.08	1.72	2.24	6.70	6.36	82.98
4)	South Kanara	1.59	1.23	24.23	8.50	64.46	2.28	5.64	20.79	14.27	57.02
5)	Gurdaspur	43.08	9.75	13.88	16.43	16.86	1.92	9.43	14.91	12.97	60.76
6)	Amritsar	36.41	12.22	10.51	23.70	17.15	1.72	8.02	20.59	11.66	57.98
7)	Ludhiana	43.72	17.31	15.83	15.83	7.31	2.57	11.90	21.33	11.78	52.42
8)	Jullundur	41.63	7.12	14.98	22.63	13.64	2.50	11.53	20.23	13.16	52.58
9)	Kapurthala	46.61	8.48	10.27	22.68	11.96	1.92	8.04	15.91	11.16	62.97
10)	Hoshiarpur	46.10	9.94	9.90	14.38	18.77	2.26	10.00	14.56	10.10	63.08
11)	Ropar	35.05	14.85	7.17	20.74	22.18	2.56	7.10	15.39	10.82	64.13
12)	Patiala	34.08	19.02	10.54	24.57	11.79	2.11	6.85	14.30	10.72	66.03
13)	Sangrur	33.15	15.28	12.38	23.79	15.40	1.54	4.79	11.56	6.78	75.33

1	2	3	4	5	6	7	8	9	10	11	12
b. Less Developed Districts:											
1)	Belgaum	1.27	1.64	8.31	3.37	85.40	1.75	4.84	13.25	7.22	72.94
2)	Bellary	0.60	1.38	6.12	7.60	84.39	2.00	3.77	11.73	11.36	71.13
3)	Bidar	0.86	0.97	6.83	8.90	82.43	1.65	2.94	11.59	9.42	74.40
4)	Bijapur	0.97	0.74	11.44	4.54	82.31	2.07	3.00	14.10	7.14	73.69
5)	Chikmagalur	1.45	0.72	2.92	13.13	81.78	1.91	2.52	9.04	10.96	75.51
6)	Chitradurga	0.54	0.86	7.89	6.32	84.39	1.97	3.01	11.92	8.09	75.00
7)	Dharwar	1.40	1.24	9.56	5.03	82.77	3.17	5.78	21.31	15.10	54.63
8)	Gulbarga	0.78	0.96	9.63	8.96	79.67	1.65	2.86	11.32	9.90	74.27
9)	Hassan	1.83	1.09	5.81	10.35	80.92	2.00	2.08	8.10	7.05	80.76
10)	Kolar	1.74	0.90	4.87	4.87	87.62	1.59	2.84	11.02	6.35	78.20
11)	Mysore	3.80	1.71	10.53	16.16	67.79	1.95	3.15	12.09	10.53	72.27
12)	North Kanara	2.38	1.51	8.75	11.09	76.63	2.37	4.24	13.52	11.71	68.15
13)	Raichur	0.35	0.90	5.24	6.58	86.92	1.40	2.47	9.51	8.66	77.95
14)	Shimoga	1.58	1.16	4.98	8.40	83.87	2.61	5.44	11.19	8.78	71.98
15)	Tumkur	1.28	0.95	9.21	5.91	82.64	1.89	2.41	8.55	5.47	81.67
16)	Ferozepur	35.08	7.40	10.29	14.37	32.81	1.61	4.14	11.51	6.89.	75.86
17)	Bhatinda	30.20	10.81	14.81	19.64	24.54	1.65	3.60	11.16	6.10	77.49

In the less developed group of the seventeen districts only five districts namely Kolar, Mysore, North Kanara, Ferozepur and Bhatinda show the trend of a higher proportion of the female professional group of workers to the total female labour force, when compared to male proportion.

2.   Generally speaking, a large number of relatively developed districts register a high proportion of female workers to the total female work force in the group of unskilled occupations. This group is second only to proportion of the female professional group of workers. However, Bangalore and South Kanara register the highest proportion of female workers in the agriculture group while semi-skilled group comes at the second place. In less developed districts one can see that the fifteen districts record a higher proportion of their female labour in the agriculture group.

3.   Comparing the male and female labour force engaged in the skilled group as proportion to their respective total male and female work force in the relatively developed districts one can observe that the districts Gurdaspur, Amritsar, Ludhiana, Kapurthala, Mopar, Patiala and Sangrur have a higher proportion of female workers in this group. In the less developed districts in this skilled group one can see only Ferozepur and Bhatinda have a higher proportion of females to the total female work force while in the rest fifteen districts the male workers proportion in skilled group is higher. This enables one to say that in the developed

areas more number of females out of the total female work force are likely to be engaged in the skilled group of occupations than that of the females in less developed areas.

4. Of the thirteen relatively developed districts only South Kanara and Sangrur and of the seventeen less developed districts only Tumkur and Bhatinda show a higher proportion of female workers to total female workforce in the semi-skilled group than that of the male workers as a proportion to the total male work force. This proves the argument beyond doubt that irrespective of the developmental achievements of a region most of its semi-skilled occupations are male oriented.

5. Most of the relatively developed districts (i.e. 11 districts of 13 districts) register a higher proportion of female workers to the total female labour force, engaged in unskilled group of occupations than that of the male labour as a proportion to the total male work force. This tendency is shown only by five districts of the seventeen less developed districts. This helps one in generalising two different trends (a) most of the developed areas will have a higher proportion of female labour to the total female labour force engaged in the unskilled group of workers than that of the male workers as a proportion to the total male labour force. (b) Less developed areas experience

just the reverse of the above trend. Here the proportion
of unskilled male labour to the total male labour is
thus higher tan that of the female workers' proportion
to the total female labour force.

6.   In the agricultural group of occupations only four
districts (incidentally all belong to the Karnataka state)
record a higher proportion of female workers to the total
male labour force in the relatively developed districts.
This trend is shown again in fourteen of the seventeen
less developed districts. This lends support to the argumen
that in most of the less developed areas a large number
of workers out of the total labour force are engaged in
agricultural activities and the tehdency of female workers
engaging themselves more in these occupations is more
evident.

Relation Between Occupational Structure and Economic Development

Before analysing the relation of each of five skill
level groups with various groups of developmental indicators
and with the overall economic development index it is
better to give a diagrammatic representation based on the
information available up to this stage. Graphs No. 1 to 5
on the following pagesgive a clear clue of their relations
with the overall economic development index.
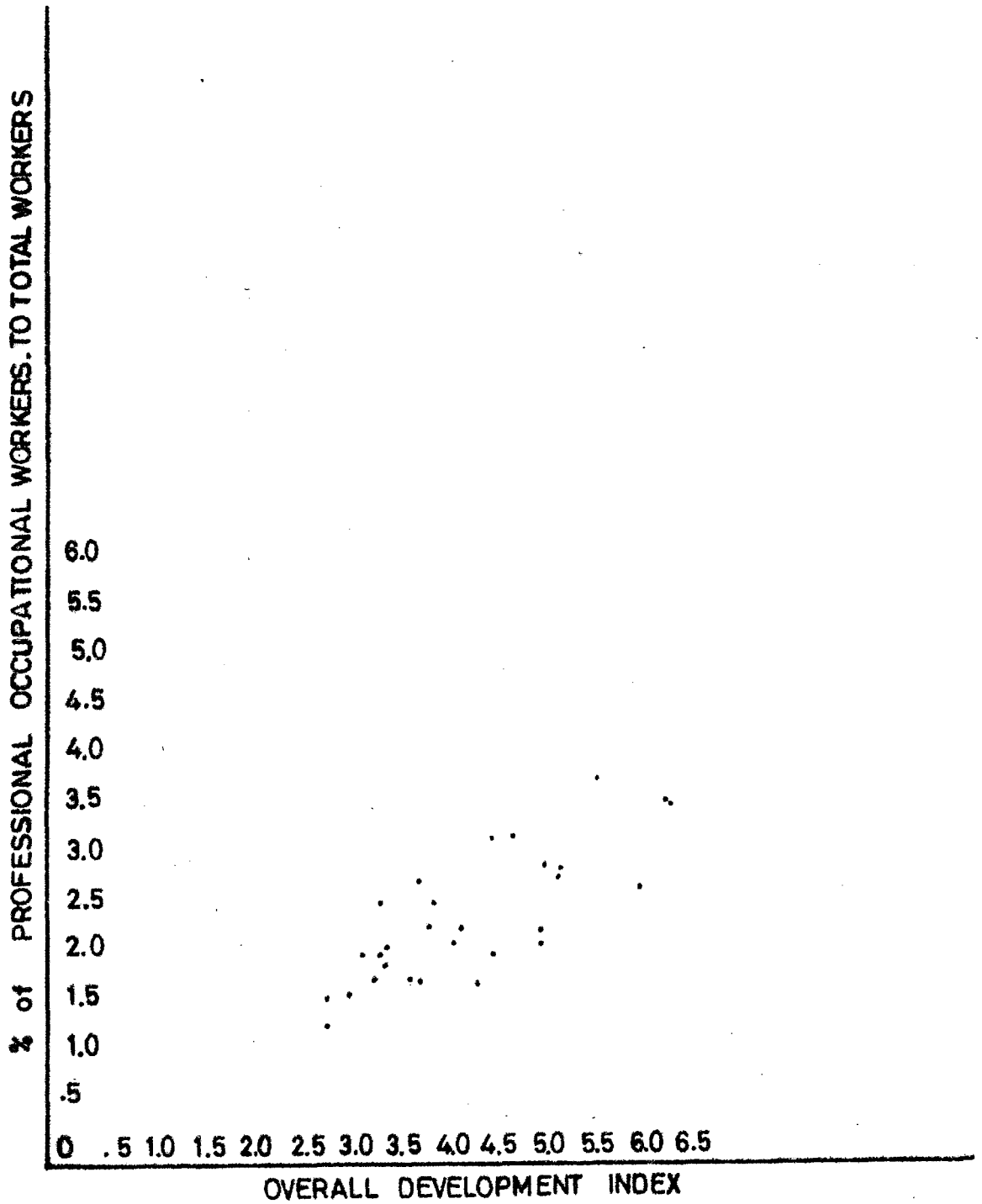
GRAPH No.1
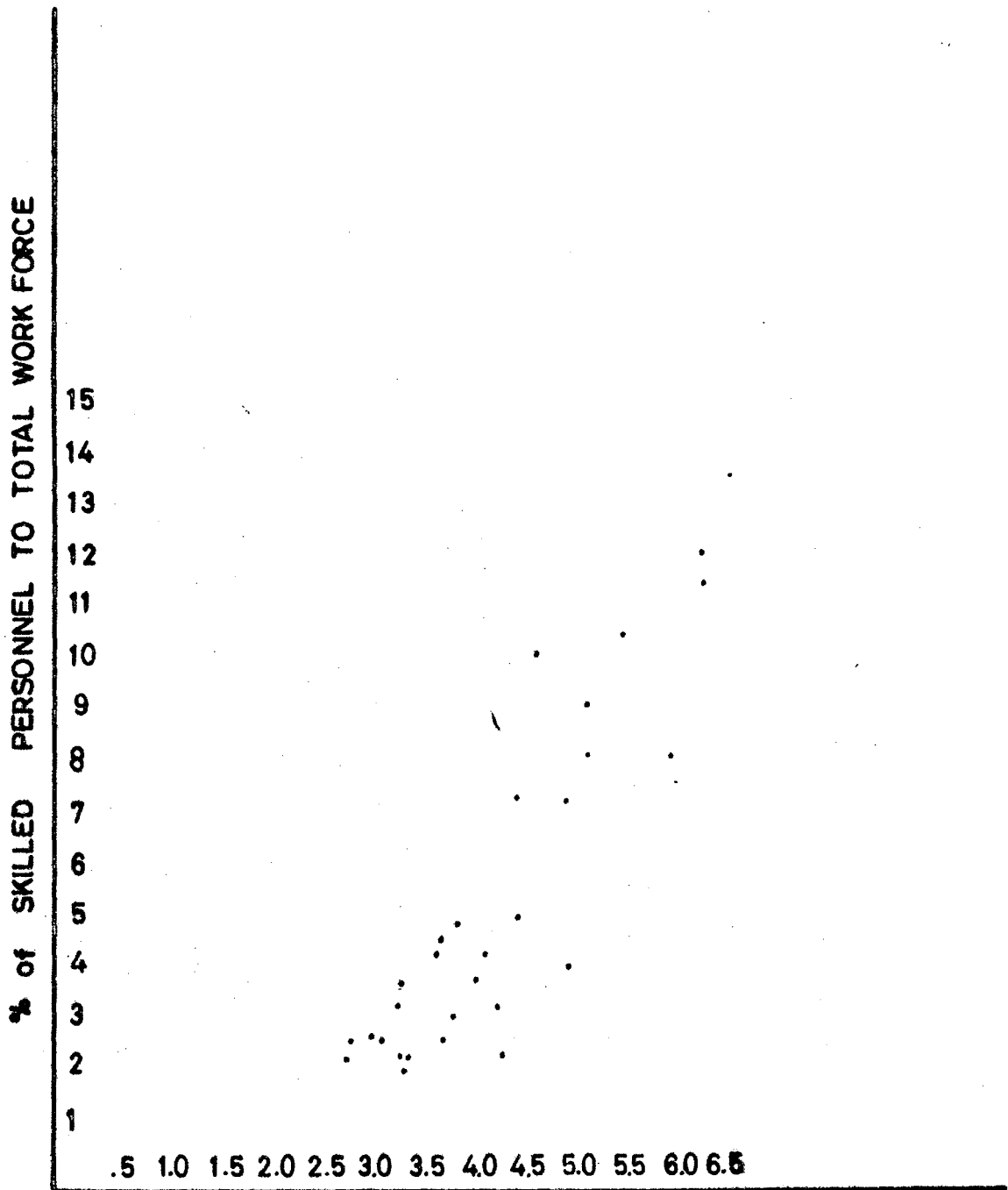
GRAPH No.2

GRAPH No. 3

% of UNSKILLED WORKERS TO TOTAL WORKFORCE

OVERALL DEVELOPMENT INDEX
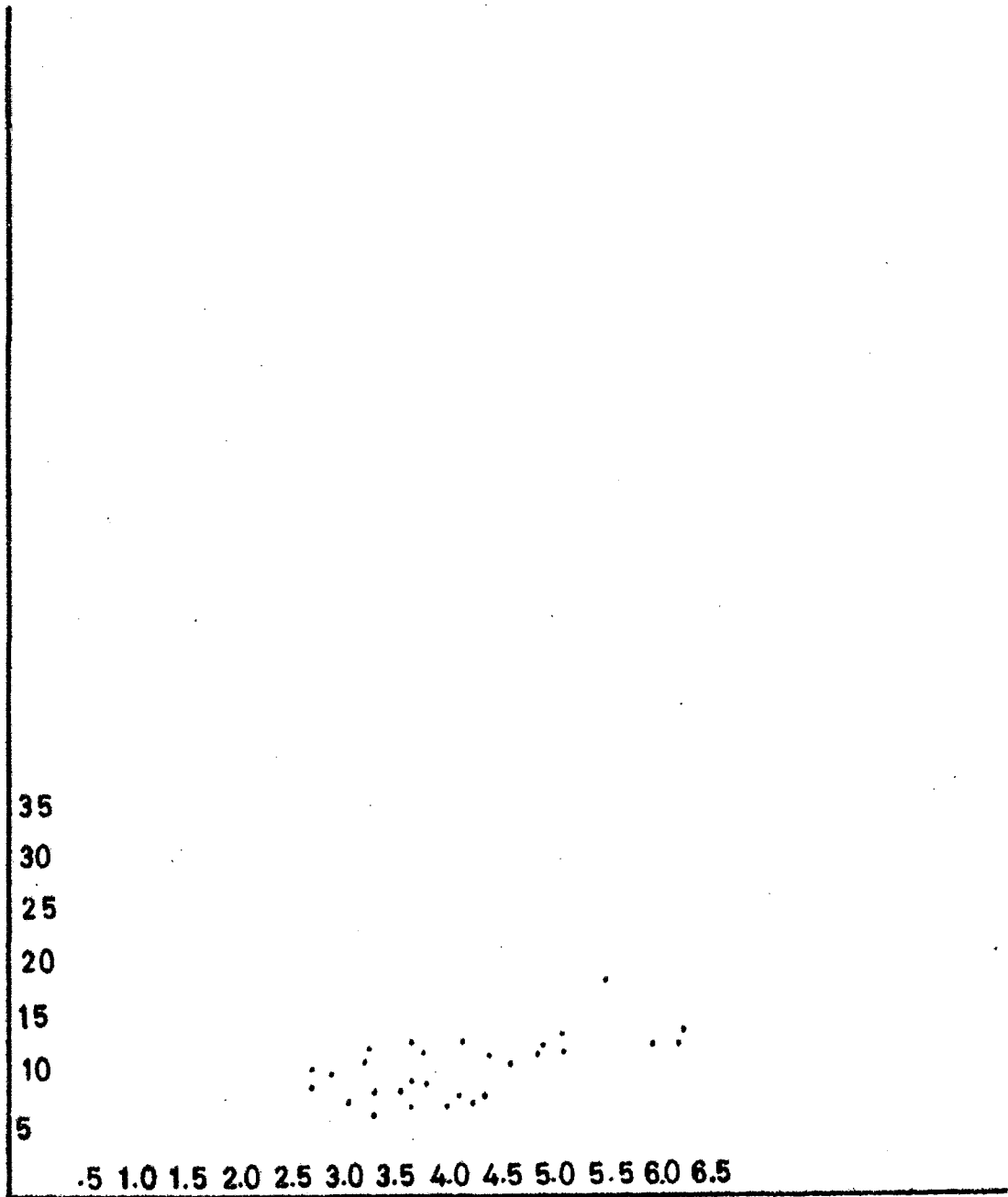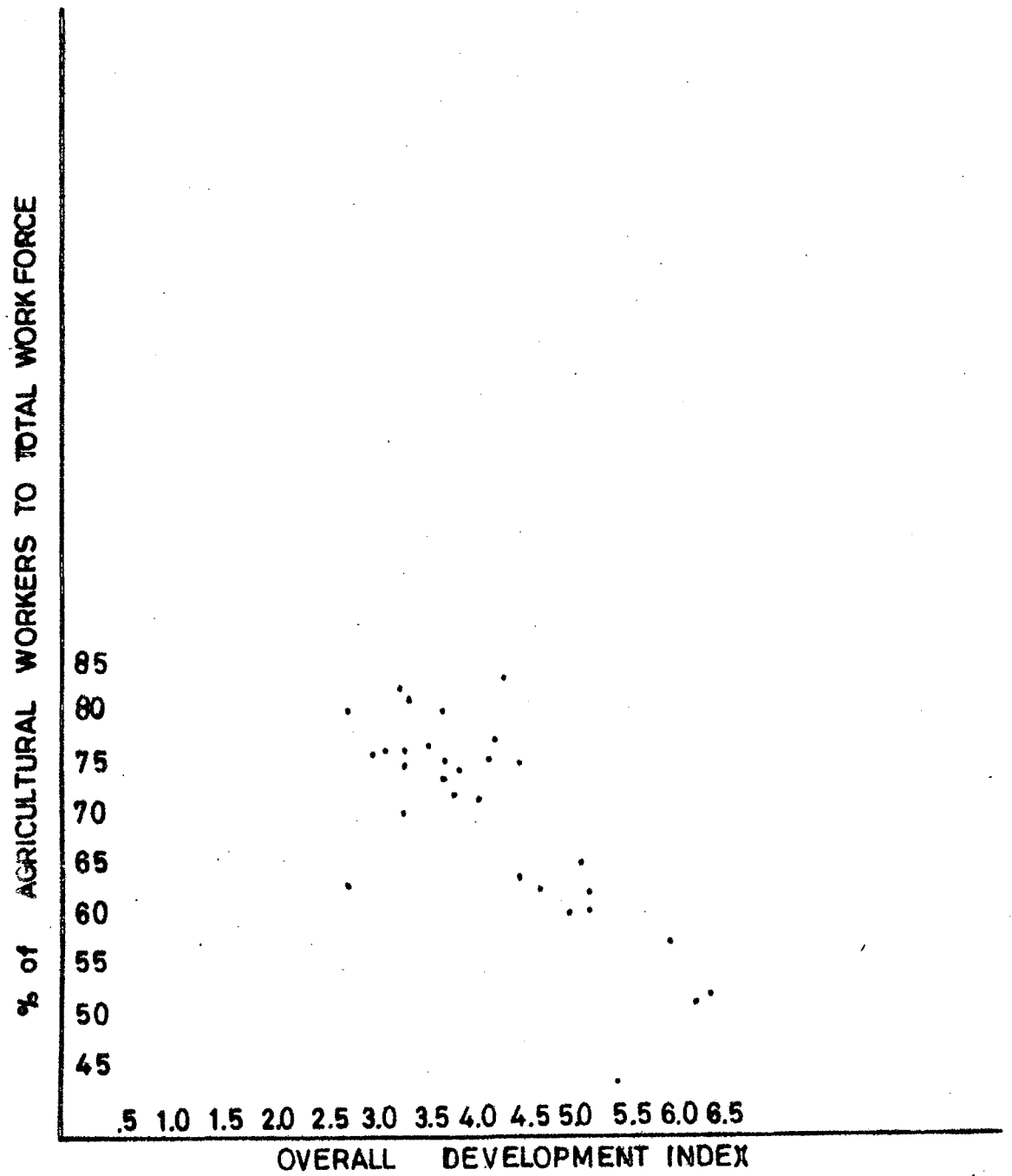
GRAPH No. 4

GRAPH No.5

Graph No. 1 gives the relationship between the professional group of workers and the overall economic development index. The scatter diagram only suggests a positive relation. Similarly Graph Nos 2, 3 and 4 show positive relation with skilled, semi-skilled and unskilled groups of workers with overall economic development index. The only difference is the slope of the scattered observations. While Grap Nos 1 and 2 are positive and rising steeply, Graph Nos 3 and 4 show that the slope is positive but gradual. Graph No. 5 which depicts the relation of agricultural group of workers with the overall economic development index shows that the relation is inverse and steep.

The relationship between occupational structure and economic development is analysed in two parts. In the first part it will be seen how the five different skill groups of workers are correlated with the groups of demographic, economic and infrastructural variables and also with the overall economic development index in the relatively developed districts. The second part will deal with the less developed districts. Thus these results will be compared to bring out the salient features of the various skill groups as related to various levels of economic development.

Relatively Developed Districts

In all thirteen districts were identified as relatively developed in this study. A majority of these districts (nine

RELATIONSHIP OF VARIOUS LEVELS OF SKILL WORKERS TO VARIOUS GROUPS OF

VARIABLES DEVELOPED DISTRICTS

Group of workers	Demographic Variables	Economic Variables	Infrastructural variables	Overall economic development index
1. Professionals	0.679*	0.427	0.145	0.626*
2. Skilled	0.696**	0.655*	0.110	0.777
3. Semi-skilled	0.740**	0.595*	0.357	0.771**
4. Unskilled	0.661**	0.111	0.478	0.516
5. Agricultural	0.802**	-0.549	-0.352	-0.797**

* Signficant at 95% confidence level

**Significant at 99% confidence level

in number) belong to the state of Punjab, while only four
districts belong to the state of Karnataka.

Table No. 5.4 gives the coefficient of correlations
of the five skill level groups with the three above mentioned
groups of variables and with overall economic development
index. Professional workers are positively correlated with
the three groups of demographic, economic and infrastructural
variables and with the overall economic development index.
This group's relation with the group of demographic variables
and with overall economic development index is significant
at 95% level of confidence. This result upholds the argument
that most of the professional group of occupations are service
oriented. So, usually they are more concentrated at densely
populated and highly urban areas. 'Sex ratio' (measured
as males per 1000 females, is taken mainly as a proxy to
migration) and growth rate of population are high in the
highly urban and more densely populated areas. Professional
group of workers are also significantly correlated with the
overall economic development index which includes all the
three groups of above said variables. Individually, economic
and infrastructural groups of variables are not significantly
correlated but when treated with the other demographic varia-
bles they became significant.

Skilled group of workers are highly and significantly
correlated with overall economic development and with the
group of demographic variables. At the same time it is also

significantly correlated with the group of economic
variables. This groups' relation with the group of
infrastructural variables though positive is low and not
significant. This group of workers are significantly related
to the variables 'number of medical institutions per 100 sq.
km. of rural area and the number of post offices per 100
sq. km. of rural area'. With other infrastructural variables
its relation is not significant. Since all these insigni-
ficantly related variables are grouped with the few
significantly related variables, this group's correlation
with the skilled group of workers is low. It is because
when these insignificantly related variables are coupled
with the few significantly related variables, they reduce
the overall weightage of the group thereby making this group's
correlation insignificant.

Semi-skilled group of workers are also related to the
demographic and economic groups of variables and with the
overall economic development index significantly. Like the
skilled group of workers this group is also insignificantly
related to the infrastructural group of variables.

Skilled and semi-skilled group of workers include
various occupations like administrators both government and
non-government, politically elected leaders, nurses, mechanics,
barbers, beauticians, etc. which are more service oriented
and less directly related to the production. Most of these

occupations are concentrated in urban areas and so they are
having particularly strong positive correlation with the
group of demographic variables, which includes mostly urban
oriented variables. Occupations like production process
workers metal and non-metal, miners and quarry men, draughts-
men which directly cater to the actual production are
positively correlated with the group of economic variables.
However, these production oriented occupations coupled
with the service oriented occupations which have nothing
directly to do with production as a whole have kept the
skilled and semi-skilled group of workers' correlation with
economic group of variables slightly low.

The unskilled group of workers include occupations
like sweepers, construction workers, dhobhis, chowkidars,
etc. They are more needed in the densely populated and urban
areas. This explains this group's significant correlation
with the demographic variables group. This group of workers
are, however, positively but insignificantly correlated with
the groups of economic and infrastructural variables and
and also with the overall economic development index. This
is because as economic development progresses, each and every
job needs some sort of specialization, and skill. So, in
these developed areas one cannot find significant correlation
of unskilled workers with the economic and demographic
variables.

In the relatively developed districts agricultural group of workers are inversely correlated with the overall economic development index. This group of workers are inversely correlated with all the above mentioned groups of variables. However, these inverse correlations are significant with the urban oriented demographic variables and with the overall economic development index. Agricultural workers are insignificantly related with the infrastructural and economic groups of variables. In economic group of variables, variables like proportion of secondary and tertiary sector workers, proportion of non-household industries etc. are included which have got a very strong inverse impact on the agricultural variables. These variables, coupled with a few agricultural variables, tilted the balance in favour of those non-agricultural variables thereby drawing this group's overall relation with the agricultural workers down. Only the length of surfaced roads per 100 sq. km. is positively (through not significant) related with this group of workers. All the rest of infrastructural variables are inversely related to the workers group. It can be seen that more infrastructural facilities are provided in an area, it increasingly attains the urban characteristics which is negatively related with the agricultural group of workers. But these results are not strong enough in this present study to theorise on this argument.

Less Developed Districts

With the help of the seventeen developmental indicators this study has been able to identify seventeen districts as less developed districts. The details of these districts were discussed in the previous section of this chapter.

TABLE 5.5

RELATIONSHIP OF VARIOUS LEVELS OF SKILL WORKERS TO
VARIOUS GROUPS OF VARIABLES - LESS
DEVELOPED DISTRICTS

Group of workers	Demographic variables	Economic variables	Infrast- ructural variables	Overall economic development industry
1.Professionals	0.058	0.408	0.368	0.424
2.Skilled	0.990**	0.643**	-0.556*	-0.653**
3.Semi-skilled	0.141	0.295	-0.095	0.125
4.Unskilled	0.001	-0.145	-0.012	-0.017
5.Agricultural	-0.963**	-0.591*	0.558*	0.647**

Table No. 5.5 presents the correlation coefficients calculated for the five skill level groups of workers and the three groups of demographic, economic and infrastructural variables and also with the overall economic development index. Analysing this table the following points become evident.

Professional group of workers are positively related with all the three groups of demographic, economic and infrastructual variables and with the overall economic development index, though all these correlations are not significant. Looking at the magnitude of the correlation coefficients, overall economic development index's relation is the highest. The second and third highest correlation coefficients are respectively economic and infrastructural groups of variables. Demographic variables group is least correlated with the professional group of workers.

Skilled group of workers are significantly and positively correlated with the groups of demographic and economic variables. Its relation with the group of infra-structural variables and with the the overall economic development index, however, is inverse and significant too. All the six variables in the group of infrastructural variables are inversely related with the skilled group of workers. May be this is attributed to the outward migration of skilled and properly educated manpower. This outmigration is due to lack of proper employment opportunities in the less developed areas.

Semi-skilled group of workers are positively related with the groups of demographic and economic variables and with the overall economic development index while it

is inversely related with the group of infrastructural
variables. But all these positive and inverse relations
are insignificantly low. This group's relation with the
group of infrastructural variables is the weakest of all.

Unskilled group of workers are inversely correlated
with the groups of economic and infrastructural variables
and with the overall economic development index. However,
this group has positive correlation with demographic variables
group but that is insignificant.

Agricultural group of workers in less developed
districts are significantly correlated with all the groups
of above mentioned variables and with the overall economic
development index. While this group's correlations with
overall economic development index and infrastructural groups
of variables are positive, its relation to the groups of
demographic and economic variables are inverse. The reason
for the inverse relation with the group of demographic
variables is the urban tilt in the selection of variables.
This group of workers are also inversely correlated with
the group of economic variablesthough this relation is not
significant. Individually this group is positively correlated
with all the three agricultural variables and with the
proportion of non-household industries, but they are not
significant. This group's relation with the proportion of
workers engaged in the secondary and tertiary sectors is

inverse and very highly significant. When all these seven variables are coupled as a group, there dominantly negative relations have tilted the whole group towards the inverse direction. Agricultural workers are positively and significantly related with the group of infrastructural variables. This upholds the general argument that in less developed areas with the development of infrastructure agriculture gets the benefit by way of increased inflow of better technical know how which revolutionises the primary sector. As a result of better production techniques and increased productivity this sector creates more employment opportunities.

Comparison

The above analysis so far has dealt in detail the correlations of various levels of skill worker groups with the developmental achievements of a region. This analysis was done separately for developed and less developed regions. To get a clear and comprehensive view, this section draws comparison between the two regions and their respective relations with the skill level workers groups. Since the detailed arguments have been placed already before, this section gives comparisons in a nut shell.

All the five groups of skill level workers are in general more correlated with the demographic groups of variables and with the overall economic development index in the developed districts. In the less developed districts

the correlations of these skill level groups of workers with the demographic variables group is not strong. Of the five skill groups of workers only two groups are correlated strongly with the demographic group of variables. In fact all the skill level groups of workers in less developed regions are not uniformaly strongly correlated with the demographic, economic and infrastructural group of variables but their correlations with the overall economic development index is strong enough. In the developed regions these skill groups are strongly correlated with the overall economic development index while their relations with the economic group of variables is not stwong enough. One more clear difference one can find is these skill group workers relation with the infrastructure group of variables. In the developed regions, this group of variables is not strongly correlated with the skill groups of workers while in less developed regions, this group of variables is considerably strongly correlated with the the skill groups of workers.

CHAPTER VI

SUMMARY AND CONCLUSIONS

For the growth of economy, wealth of natural resources is relevant and wealth of human resources is crucially relevant too. The quality of natural resources, size and sectoral distribution of labour force, mode of production, percapita income, literacy rates and so on of a region do not always explain fully the level of economic development of that region. The remaining unexplained portion is attributed to 'residual factor' which includes skills of labour force, educational attainment of labour force, sociological and religious factors, demographic factors and so on.

In a country as big and fragmented as India, one cannot find uniform economic development. This is because of lack of proper organisation and exploitation of available natural and human resources as well. A country's economic development is closely related to the proper organisation and employment of its human resources available. So, this human resource planning and development should become an integral part of economic planning and should assume a greater role. This needs a thorough knowledge of the current positions in respect of human resources. This necessitates

an accurate assessment of labour force in the nation
with its full details such as occupations, skill attainments,
educational attainments and other such characteristics
of the labour force.

In light of this necessity, the present study
tried primarily to see the relation between various skill
groups of workers and economic development both in the
developed areas and in the less developed areas. Taking
the National Classification of Occupations (1968), this
study has grouped them into four skill groups keeping in
view workers' educational attainment and training (both
formal and informal). Because of the difficulty in grading
the large agricultural and related workers, they were
grouped under a separate category termed as 'agricultural
and related workers'. Altogether five skill groups of
workers were formed, which were the following:

    1. Professional workers

    2. Skilled workers

    3. Semi-skilled workers

    4. Unskilled workers, and

    5. Agricultural and related workers.

This study has taken the 1971 census data on occu-
pations of Karnataka and Punjab at district level as its
base. The census data though belongs to the year 1971 has
been taken mainly because of its coverage, reliability,

comparability between regions and availability of data even for the micro level classifications. The states of Karnataka and Punjab were taken as study area mainly because of the data availability. For other states data are not available. Besides, disparity between the per capita income of the two states has prompted the selection of these.

Karnataka is geographically a bigger state and more populous one than Punjab. So, it is but natural that Karnataka has a bigger labour force than that of the Punjab. In the same way, Karnataka's labour force participation rate is higher than that of Punjab. But, when Punjab's female labour participation rate is compared with that of Karnataka's, it is very small. For that matter, Punjab's female work participation rates are among the lowest in India. Excluding agricultural workers, both the state's labour force was found concentrated in the occupational category 'production and related workers, transport equipment operators and labourers'. In Punjab most of the male workers are found in this category while their female counterparts are found in the 'Professional, Technical and Related workers' category. In Karnataka, most of the male and female workers are found engaged in the category 'Production and Related workers...' In these two states

industrial category 'Other Services' has got the highest
number of male and female professional group of workers
and most of them belong to the 'employee' states.

Analysing the occupational structure at district
level in both the states of Karnataka and Punjab, it is
seen that more than 72% of the total work force in each of the
nineteen districts (excepting Bangalore district) is concen-
trated in the agricultural and related workers group.   In
Punjab also the largest number of workers are concentrated
in agricultural sector.   Punjab's male workers are engaged
in this sector while most of the female work force in
Punjab state is engaged in the professional group of
occupations.   Analysing the occupational differentiation,
this study finds that in Punjab, out of the total female
work force, professional, skilled and unskilled groups of
occupations are found to attract more female workers, while
in Karnataka only agricultural group of occupations are
recorded to attract a large number of female workers out
of the total female work force.   All other four groups of
occupations are found to have a large number of male workers
as a proportion to the total male work force.   In Punjab,
male workers are more concentrated in the agricultural and
the semi-skilled group of occupations.   But the total female
work force is very small when compared to the total male
work force.

Before correlating the various groups of skilled
workers to the levels of economic development it is
imperative to identify various levels of economic develop-
ment. To identify these levels of development this study
has selected seventeen variables and depending on the
general nature of those variables, has grouped them into
three different categories which are as follows:

(i)   Demographic group: this includes four variables

(ii)   Economic group: this includes seven variables

(iii)   Infrastructural group: this includes six variables

Using the Modified Principle Component Analysis
technique, this study has derived composite scores for all
the above said three groups of variables and an overall
economic development index was also formulated with the
total number of variables. Depending on the magnitude of
the composite scores, using the quartile method, this study
has identified four groups of development:

(a)   Highly developed districts,

(b)   Relatively more developed districts,

(c)   Less developed districts, and

(d)   Least developed districts.

For correlating the level of economic development
and occupational structure, these four groups of development
have further been condensed. These condensed groups are:

(a)   Relatively developed districts comprising the
        highly and relatively more developed districts,
        and

(b)   Less developed districts comprising the less and
        least developed districts.

        In the final analysis this study concludes that:

(i)   As development proceeds, the distribution of work
force is biased towards male workers. That means the
proportion of male workers of the total labour force in
more developed areas is more than that of the male workers
in the less developed areas. In another way this means that
as development proceeds increasingly more and more women
workers go out of the labour market.

(ii)   As development proceeds, the distribution of work
force is biased towards professional, skilled, and semi-
skilled groups of occupations.

(iii)   Irrespective of developmental achievement of a
region, the size of the total female workers is smaller
than the size of the total male workers in the labour force
of that region.

(iv)   The proportion of female workers engaged in the
groups of professional and unskilled occupations to the
total female workers is higher than that of the male workers
to the total male workers.

(v)   In the more developed areas, agricultural occupations
became more male oriented whereas, in less developed areas,

a very high proportion of female workers to the total
female workers are found to be engaged in this group
of occupations.

(vi)   Regardless of the developmental achievement of
a region, almost all semi-skilled group of occupations
are mostly male oriented.

(vii)   Occupational structure in relatively developed
districts is significantly and positively correlated with
the overall economic development index and with the groups
of demographic and economic variables whereas in the
less developed districts the occupational structure is
not strongly correlated with all the above said three
groups of variables and with the overall economic development
index.

The study has only tried to establish the relation-
ship between a given region's occupational structure and
its economic development. This study is not exhaustive
because of the non-availability of data in a required form.
This study has shown only the broad trends of the
relationship between the two. The relationship between
productivity of labour and the skilled level and industrial
demands for various skill level workers and many other
aspects can only be done at a higher level research. This
is only a sort of elementary study which should necessarily
be followed by a more detailed and indepth study based on
primary data to throw more light on this subject.

NATIONAL CLASSIFICATION OF OCCUPATIONS—1968   **142**

DIVISION 0-1 PROFESSIONAL, TECHNICAL AND RELATED WORKERS

Group 00   Physical Scientists

Families
000	Physicists
001	Chemists (Excluding Pharmaceutical Chemists)
002	Geologists and Geophysicists
003	Metereologists
009	Physical Scientists, n.e.c.

Group 01   Physical Science Technicians

Family
010	Physical Science Technicians

Group 02   Architects, Engineers, Technologists and Surveyors

Families
020	Architects and Town Planners
021	Civil Engineers
022	Electrical & Electronic Engineers
023	Mechanical Engineers
024	Chemical Engineers
025	Metallurgists
026	Mining Engineers
027	Industrial Engineers
028	Surveyors
029	Architects, Engineers, Technologists & Surveyors, n.e.c.

Group 03   Engineering Technicians

Families
030	Draughtsmen
031	Civil Engineering Overseers and Technicians
032	Electrical & Electronic Engineering Overseers and Technicians
033	Mechanical Engineering Overseers & Technicians
034	Chemical Engineering Technicians
035	Metallurgical Technicians
036	Mining Technicians
037	Survey Technicians
039	Engineering Technicians, n.e.c.

Group 04   Aircraft and Ships Officers

Families
040	Aircraft Pilots
041	Flight Engineers
042	Flight Navigators
043	Ships, Deck Officers & Pilots
044	Ships, Engineers
049	Aircraft Engineers

Group 05   Life Scientists

Families
050	Biologists, Zoologists, Botanists & Related Scientists
051	Bacteriologists, Pharmacologists & Related Scientists
052	Silviculturists
053	Agronomists & Agricultural Scientists
059	Life Scientists, n.e.c.

Group 06   Life Science Technicians

Family
060	Life Science Technicians

Group 07   Physicians and Surgeons (Allopathic, Dental and Veterinary Surgeons)

Families
070	Physicians & Surgeons Allopathaic
071	Physicians & Surgeons Ayurvedic
072	Physicians & Surgeons Homeopathic
073	Physicians & Surgeons Unani
074	Dental Surgeons
075	Veterinarians
076	Pharmacists
077	Dieticians & Nutritionists
078	Public Health Physicians
079	Physicians & Surgeons, n.e.c.

Group 08   Nursing and other Medical and Health Technicians

Families
080	Vaccinators, inoculators, Medical Assistants
081	Dental Assistants
082	Veterinary Assistants
083	Pharmaceutical Assistants
084	Nurses
085	Midwives & Health Visitors
086	X-Ray Technicians
087	Optometrists and Opticians
088	Physiotherapists and Occupational Therapists
089	Nursing, Sanitary and Other Medical & Health Technicians, n.e.c.

Group 09   Scientific, Medical and Technical Persons, other

Family
099	Scientific, Medical and Technical Persons, other

Group 10   Mathematicians, Statisticians and Related Workers

Families
100	Mathematicians
101	Statisticians
102	Actuaries
103	System Analysts and Programmers
104	Statistical Investigators and Related Workers
109	Mathematicians, Statisticians & Related Workers, n.e.c.

Group 11   Economists and Related Workers

Families
110	Economists
111	Economic Investigators & Related Workers
119	Economists & Related Workers, n.e.c.

Group 12   Accountants, Auditors and Related Workers

Families
120	Accountants & Auditors
121	Cost & Works Accountants
129	Accountants, Auditors & Related Workers, n.e.c.

Group 13   Social Scientists and Related Workers

Families
130	Sociologists & Anthropologists
131	Historians, Archaeologists & Political Scientists & Related Workers.
132	Geographers
133	Psychologists
134	Librarians, Archivists & Curators
135	Philologists, Translators & Interpreters
136	Personnel and Occupational Specialists
137	Labour, Social Welfare & Political Workers
139	Social Scientists and Related Workers, n.e.c.

Group 14   Jurists

Families
140	Lawyers
141	Judges and Magistrates
142	Law Assistant
149	Jurists, (including petition writers), n.e.c.

Group 15   Teachers

Families
150	Teachers, University and Colleges
151	Teachers, Higher Secondary & High School
152	Teachers, Middle School
153	Teachers, Primary
154	Teachers, Pre-Primary
155	Teachers, Special Education
156	Teachers, Craft
159	Teachers, n.e.c.

DIVISION 0-1 PROFESSIONAL, TECHNICAL AND RELATED WORKERS—*Concld.*

Group 16   Poets, Authors, Journalists and Related Workers

Families 160 Poets, Authors & Critics
161 Editors and Journalists
169 Poets, Authors, Journalists and Related Workers, n.e.c.

Group 17   Sculptors, Painters, Photographers and Related Creative Artists

Families 170 Sculptors, Painters & Related Artists
171 Commercial Artists, Interior Decorators & Designers
172 Movie Camera Operators
173 Photographers, other
179 Sculptors, Painters, Photographers & Related Creative Artists, n.e.c.

Group 18   Composers and Performing Artists

Families 180 Composers, Musicians and Singers
181 Choreographers & Dancers and Singers
182 Actors
183 Stage & Film Directors & Producers (Performing Arts)
184 Circus Performers
189 Composers & Performing Artists, n.e.c.

Group 19   Professional Workers, n.e.c.

Families. 190 Ordained Religious Workers
191 Non-Ordained Religious Workers
192 Astrologers, Palmists & Related Workers
193 Athletes, Sportsmen and Related Workers
199 Professional Workers, n.e.c.

DIVISION 2 ADMINISTRATIVE, EXECUTIVE AND MANAGERIAL WORKERS

Group 20   Elected and Legislative Officials

Families 200 Elected Officials, Union Govt.
201 Elected Officials, State Govt.
202 Elected Officials, Local Bodies
209 Elected Officials, n.e.c.

Group 21   Administrative and Executive Officials, Government and Local Bodies

Families 210 Administrative & Executive Officials, Union Govt.
211 Administrative & Executive Officials, State Govt.
212 Adminstrative & Executive Officials, Quasi-Govt.
213 Administrative & Executive Officials, Local Bodies
219 Administrative & Executive Officials, Govt. Bodies, n.e.c.

Group 22   Working Proprietors, Directors and Managers, Wholesale and Retail Trade

Families 220 Working Proprietors, Directors & Managers, Wholesale Trade
221 Working Proprietors, Directors & Managers, Retail Trade
229 Working Proprietors, Directors & Managers, Wholesale & Retail Trade, n.e.c.

Group 23   Directors and Managers, Financial Institutions

Families 230 Directors & Managers, Bank
231 Directors & Managers, Insurance
239 Directors & Managers, Financial Institutions n.e.c.

DIVISION 2 ADMINISTRATIVE, EXECUTIVE AND MANAGERIAL WORKERS (*Contd*)

Group 24   Working Proprietors, Directors and Managers, Mining, Construction Manufacturing and Related Concerns

Families 240 Working Proprietors, Directors & Managers, Mining, Quarrying and Well Drilling
241 Working Proprietors, Directors & Managers, Construction
242 Working Proprietors, Directors & Managers, Electricity, Gas and Water
243 Working Proprietors, Directors & Managers, Manufacturing
249 Working Proprietors, Directors & Managers, Mining, Construction, Manufacturing & Related Concerns, n.e.c.

Group 25   Working Proprietors, Directors, Managers and Related Executives, Transport, Storage and Communication

Families 250 Working Proprietors, Directors & Managers & Related Executives, Transport
251 Directors, Managers & Related Executive, Communication
252 Working Proprietors, Directors & Managers & Related Executives Storage and Warehouses
259 Working Proprietors, Directors, Managers & Related Executives, Transport, Storage & Communication, n.e.c.

Group 26   Working Proprietors, Directors and Managers, Other Services

Families 260 Working Proprietors, Directors & Managers, Lodging & Catering Services
261 Working Proprietors, Directors & Managers, Recreation and Entertainment
269 Working Proprietors, Directors, Managers & Related Executives, Other Services

Group 29   Administrative, Executive and Managerial Workers, n.e.c.

Family 299 Administrative, Executive & Managerial Workers, n.e.c.

DIVISION 3 CLERICAL AND RELATED WORKERS

Group 30   Clerical and Other Supervisors

Families 300 Clerical Supervisors (Office), Superintendents, Head Clerks & Section Heads
301 Other Supervisors (Inspectors, etc.)
302 Ministerial and Office Assistants
309 Clerical and Other Supervision, n.e.c.

Group 31   Village Officials

Family 310 Village Officials

Group 32   Stenographers, Typists and Card & Tape Punching Operators

Families 320 Stenographers & Steno Typists
321 Typists
322 Teletypists (Teleprinter Operators)
323 Card and Tape Punching Machine Operators
329 Stenographer, Typists and Card & Tape Punching Operators, n.e.c.

Group 33   Book-Keepers, Cashiers and Related Workers

Families 330 Book-Keepers & Accounts Clerks
331 Cashiers
339 Book-Keepers, Cashiers & Related Workers n.e.c.

DIVISION 3 CLERICAL AND RELATED WORKERS—Concld.

Group 34		Computing Machine Operators
Families	340	Book-Keeping & Calculating Machine Operators
	341	Automatic Data Processing Machine Operators
	349	Computing Machine Operators, n.e.c.

Group 35		Clerical and Related Workers, n.e.c.
Families	350	Clerks, General
	351	Store-Keepers & Related Workers
	352	Receptionists
	353	Library Clerks
	354	Time Keepers
	355	Coders
	356	Ticket Sellers
	357	Ticket Collectors, Checkers & Examiners
	358	Office Attendants, (Peons, Daftries etc).
	359	Clerical and Related Workers (including Proof Readers & Copy Holders) n.e.c.

Group 36		Transport and Communication Supervisors
Families	360	Station Masters & Station Superintendent, Transport
	361	Post Masters, Telegraph Masters & Other Supervisors
	369	Transport & Communication Supervisors, n.e.c.

Group 37		Transport Conductors and Guards
Families	370	Guards and Brakesmen, Railway
	371	Conductors, Transport
	379	Transport Conductors & Guards, n.e.c.

Group 38		Mail Distributors and Related Workers
Families	380	Postmen
	381	Messengers & Despatch Riders
	389	Mail Distributors & Related Workers, n.e.c.

Group 39		Telephone and Telegraph Operators
Families	390	Telephone Operators
	391	Telegraphists & Signallers
	392	Radio Communications & Wireless Operators
	399	Telephone & Telegraph Operators, n.e.c.

DIVISION 4 SALES WORKERS

Group 40		Merchants and Shop Keepers, Wholesale and Retail Trade
Families	400	Merchants and Shop Keepers, Wholesale Trade
	401	Merchants and Shop Keepers, Retail Trade
	409	Merchants and Shop Keepers, Wholesale and Retail Trade, n.e.c.

Group 41		Manufacturers and Agents
Families	410	Sales Supervisors
	411	Purchasing Agents
	412	Selling Agents
	419	Manufacturers Agents, n.e.c.

DIVISION 4 SALES WORKERS—Concld.

Group 42		Technical Salesmen and Commercial Travellers
Families	420	Technial Salesmen and Service Advisors
	421	Commercial Travellers
	429	Technical Salesmen and Commercial Travellars, n.e.c.

Group 43		Salesmen, Shop Assistants and Related Workers
Families	430	Salesmen, Shop Assistants and Demonstrators
	431	Street Vendors, Canvassers and News Vendors
	439	Salesmen, Shop Assistants & Related Workers n.e.c.

Group 44		Insurance, Real Estate, Securities and Business Service Salesmen and Auctioneers
Families	440	Agents & Salesmen, Insurance
	441	Agents, Brokers, and Salesmen Real Estate
	442	Agents, Brokers, Securities and Shares
	443	Agents, Brokers and Salesmen, Advertising & Other Business Service
	444	Auctioneers
	445	Valuers and Appraisers
	449	Insurance, Real Estate, Securities & Business Service/Salesmen and Auctioneers, n.e.c.

Group 45		Money Lenders and Pawan Brokers
Families	450	Money Lenders (including indigenous Bankers)
	451	Pawn Brokers
	459	Money Lender & Pawn Brokers n.e.c.

Group 49		Sales Workers, n.e.c.
Family	499	Sales Workers, n.e.c.

DIVISION 5 SERVICE WORKERS

Group 50		Hotel and Restaurent Keepers
Family	500	Hotel and Restaurant Keepers

Group 51		House Keepers, Matrons and Stewards (Domestic & Institutional)
Family	510	House Keepers, Matrons and Stewards

Group 52		Cooks, Waiters, Bartenders and related Workers (Domestic and Institutional)
Families	520	Cooks and Cook-Bearers
	521	Butleres, Bearers & Waiters
	522	Bartenders & Related Workers
	529	Cooks, Waiter, Bartenders, and Related Workers (Domestic and Institutional), n.e.c.

Group 53		Maids and Related House Keeping Service Workers, n.e.c.
Families	530	Ayaha, Nurse, Maids
	531	Domestic Servants
	539	Maids and Related House Keeping Service Workers, n.e.c.

DIVISION 5 SERVICE WORKERS—*Contd.*

Group 54   Building Caretakers, Sweepers, Cleaners and Related Workers

Families
540 Building Caretakers
541 Sweepers, Cleaners & Related Workers
542 Watermen
549 Building Caretakers, Sweepers, Cleaners and Related Workers, n.e.c.

Group 55   Launders Dry-Cleaners and Pressers n.e.c.

Families
550 Laundrymen, Washermen & Dhobis
551 Dry-Cleaners and Pressers
559 Launders, Dry-Cleaners and Pressers, n.e.c

Group 56   Hair Dressers, Barbers, Beauticians, and Related Workers

Family 560 Hair Dressers, Barbers, Beauticians & Related Workers

Group 57   Protective Service Workers

Families
570 Fire Fighters
571 Policemen and Detectives
572 Customs Examiners, Patrollers and Related Workers
573 Protection Force, Home Guards and Security Workers
574 Watchmen, Chowkidars & Gate Keepers
579 Protective Service Workers, n.e.c.

Group 59   Service Workers n.e.c.

Families
590 Guides
591 Undertakers & Embalmers
599 Service Workers, n.e.c.

DIVISION 6 FARMERS, FISHERMEN, HUNTERS LOGGERS AND RELATED WORKERS

Group 60   Farm Plantation, Dairy and Other Managers And Supervisors

Families
600 Farm Managers & Supervisors, Crop Production
601 Managers, Plantation
602 Farm Managers, Horticulture
603 Farm Managers, Livestock Farm
604 Farm Managers, Dairy Farm
605 Farm Managers, Poultry Farm
609 Farm Managers & Supervisors, n.e.c.

Group 61   Cultivators

Families
610 Cultivators (Owners)
611 Cultivators (Tenants)
619 Cultivators, n.e.c.

Group 62   Farmers Other Than Cultivators

Families
620 Planters
621 Livestock Farmers
622 Dairy Farmers
623 Poultry Farmers
624 Insect Rearers
625 Orchard, Vineyard & Related Workers
629 Farmers, Other than Cultivators, n.e.c.

Group 63   Agricultural Labourers

Family 630 Agricultural Labourers

Group 64   Plantation Labourers and Related Workers.

Families
640 Plantation Labourers
641 Tappers (Palm, Rubber Trees etc).
649 Plantation Labourers & Related Workers, n.e.c.

Group 65   Other Farm Workers

Families 650 Farm Machinery Operators

DIVISION 6 FARMERS, FISHERMEN, HUNTERS, LOGGERS, AND RELATED WORKERS—*Contd.*

Family 650-651 Farm Workers, Animal, Birds and Insect Rearing
652 Gardeners & Nursery Workers
659 Other Farm Workers, n.e.c.

Group 66   Forestry Workers

Families
660 Foresters & Related Workers
661 Harvesters & Gatherers of Forest Products (including Lac except Logs)
662 Log Fellers & Wood Cutters
663 Charcoal Burners & Forest Product Processors
669 Loggers & Other Forestry Workers, n.e.c.

Group 67   Hunters And Related Workers

Families
670 Hunters
671 Trappers
679 Hunters and Related Workers, n.e.c.

Group 68   Fishermen And Related Workers

Families
680 Fishermen, Deep Sea
681 Fishermen, Inland & Coastal Waters
682 Conch & Shell Gatherers, Sponge & Pearl Divers
689 Fishermen & Related Workers, n.e.c.

DIVISION 7-8-9 PRODUCTION AND RELATED WORKERS, TRANSPORT EQUIPMENT OPERATORS AND LABOURERS

Group 71   Miners, Quarrymen, Well Drillers & Related Workers

Families
710 Supervisors & Foremen, Mining, Quarrying, Well Drilling & Related Activities
711 Miners
712 Quarrymen
713 Driller, Mines & Quarries
714 Shot Firers
715 Miners & Quarrymen, Other
716 Well Drillers, Petroleum and Gas
717 Well Drillers, Other than Petroleum and Gas
718 Mineral Treaters
719 Miners, Quarrymen and Related Workers, n.e.c.

Group 72   Metal Processors

Families
720 Supervisors & Foremen, Metal Smelting, Converting and Refining
721 Metal Smelting, Converting and Refining Furnacemen
722 Metal Rolling Mill Workers
723 Metal Melters & Reheaters
724 Metal Casters
725 Metal Moulders & Core-Maker
726 Metal Annealers, Temperers & Case Hardeners
727 Metal Drawers & Extruders
728 Metal Platers & Coaters
729 Metal Processors, n.e.c.

Group 73   Wood Preparation Workers And Paper Makers

Families
730 Supervisors & Foremen, Wood Preparation & Paper Making
731 Wood Treaters
732 Sawyers, Plywood Makers & Related Wood Processing Workers

*A new family Supervisors and Foremen has been introduced at the beginning of each group under Division 7-8-9. There were no such families in N.C.O., 1958 and such persons were generally classified alongwith workers they supervised in their appropriate place.

	733	Paper Pulp Preparers
	734	Paper Makers
	739	Wood Preparation and Paper Making Workers, n.e.c.

Group 74   **Chemical Processors and Related Workers**

Families	740	Supervisors & Foremen Chemical, Processing & Related Activities
	741	Crushers, Grinders & Mixers
	742	Cookers, Roasters & Related Heat Treaters
	743	Filter & Separator Operator
	744	Still & Reactor Operators
	745	Petroleum Refining, Workers
	749	Chemical Processors & Related Workers, n.e.c.

Group 75   **Spinners, Weavers, knitters, Dyers and Related Workers**

Families	750	Supervisors & Foremen, Spinning, Weaving, Knitting, Dyeing & Related Processes
	751	Fibre Preparers
	752	Spinners and Winders
	753	Warpers and Sizers
	754	Weaving & Knitting Machine Setters & Pattern Card Preparers
	755	Weavers & Related Workers
	756	Carpet Makers & Finishers
	757	Knitters
	758	Bleachers, Dyers & Textile Printers and Finishers
	759	Spinners Weavers, Knitters, Dyers & Related Workers, n.e.c.

Group 76   **Tanners, Fellmongers and Pelt Dressers**

Families	760	Supervisors & Foremen Tanning & Pelt Dressing
	761	Tanners & Fellmongers
	762	Pelt Dressers
	769	Tanners, Fellmongers and Pelt Dressers, n.e.c.

Group 77   **Food and Beverage Processors**

Families	770	Supervisors and Foremen, Food & Beverage Processing
	771	Grain Millers, Parchers & Related Workers
	772	Crushers & Pressers, Oil Seeds
	773	Khandsari, Sugar & Gur Makers
	774	Butchers & Meat Preparers
	775	Food Preservers & Canners
	776	Dairy Product Processors
	777	Bakers, Confectioners, Candy & Sweetmeat Makers & Other Food Processors
	778	Tea, Coffee & Cocoa Preparers
	779	Brewers & Aerated Water & Beverage Makers

Group 78   **Tobacco Preparers and Tobacco Product Makers**

Families	780	Supervisors & Foremen Tobacco & Tobacco Product Making
	781	Tobacco Preparers
	782	Cigar Makers
	783	Cigarette Makers
	784	Bidi Makers
	789	Tobacco Preparers & Tobacco Product Makers, n.e.c.

Group 79   **Tailors, Dress Makers, Sewers, Upholsterers and Related Workers**

Families	790	Supervisors & Foremen, Tailoring, Dress Making, Sewing & Upholstery Work
	791	Tailors and Dress Makers

	792	Fur Tailors & Related Workers
	793	Milliners, Hat & Cap Makers
	794	Pattern Makers & Cutters
	795	Sewers & Embroiderers
	796	Upholsters & Related Workers
	799	Tailors, Dress Makers, Sewers, Upholsters & Related Workers, n.e.c.

Group 80   **Shoemakers & Leather Goods Makers**

Families	800	Supervisors & Foremen, Shoe and Leather Goods Making
	801	Shoemakers & Shoe Repairers
	802	Shoe Cutters, Lasters, Sewers and Related Workers
	803	Harness and Saddle Makers
	809	Leather Cutters, Lasters and Sewers and Related Workers, n.e.c.

Group 81   **Carpenters, Cabinet and Related Wood Workers**

Families	810	Supervisors & Foremen, Carpentry, Cabinet Making & Related Wood Working Processes
	811	Carpenters
	812	Cabinet Makers
	813	Wood Working Machine Operators
	814	Cart Builders & Wheel Wright
	815	Coach & Body Builders
	816	Shipwrights & Boat Builders
	819	Carpenters, Cabinet Makers & Related Workers, n.e.c.

Group 82   **Stone Cutters and Carvers**

Families	820	Supervisors & Foremen Stone Cutting & Carving
	821	Stone Cutters & Carvers
	829	Stone Cutters and Carvers, n.e.c.

Group 83   **Blacksmiths, Tool Makers and Machine Tool Operators**

Families	830	Supervisors & Foremen, Blacksmithy, Tool Making & Machine Tool Operation
	831	Blacksmiths, Hammersmiths and Forging Press Operatores
	832	Metal Markers
	833	Tool Makers & Metal Pattern Makers
	834	Machine Tool Setters
	835	Machine Tool Operators
	836	Metal Grinders, Polishers & Tool Sharpeners
	839	Blacksmiths, Tool Makers & Machine Tool Operations, n.e.c.

Group 84   **Machinery Fitters, Machine Assemblers and Precision Instrument makers (Except Electrical)**

Families	840	Supervisors & Foremen, Machinery Fitting, Assembling, Repairing & Precision Instrument Making (Except Electrical)
	841	Watch, Clock & Precision Instrument Makers (Except Electrical)
	842	Machinery Fitters & Machine Assemblers
	843	Motor Vehicle Mechanics
	844	Aircraft Engine Mechanics
	845	Mechanics, Repairmen, Other
	849	Machinery Fitters, machine Assemblers & Precision Instrument Makers (Except Electrical), n.e.c.

DIVISION 7-8-9. PRODUCTION AND RELATED WORKERS, TRANSPORT EQUIPMENT OPERATORS AND LABOURERS - *Contd.*

Group	**85**	**Electrical Fitters and Related Electrical and Electronic Workers**
Families	850	Supervisors & Foremen Electrical & Eletronic Equipment Fitting. Assembling, Installing and Repairing
	851	Electricians, Electrical Fitters & Related Workers
	852	Electronic Fitters
	853	Electrical & Electronic Equipment Assemblers
	854	Radio & Television Mechanics and Repairmen
	855	Electrical Wiremen
	856	Telephone & Telegraph Installers & Repairmen
	857	Electric Linemen & Cable Jointers
	859	Electrical Fitters & Related Electrical and Electronic Workers, n.e.c.

Group	**86**	**Broadcasting Station and Sound Equipment Operators and Cinema Projectionists**
Families	860	Supervisors. Broadcasting, Audio-Visual Projection and Sound Equipment Operations
	861	Radio Broadcasting Television Operators
	862	Sound Equipment Operators and Cinema Projectionists
	869	Broadcasting Station and Sound Equipment Operators and Cinema Projectionists, n.e.c.

Group	**87**	**Plumbers, Welders, Sheet Metel and Structural Metal Preparers and Erectors**
Families	870	Supervisors & Foremen, Plumbing, Welding, Structural & Sheet Metal Working
	871	Plumbers & Pipe Fitters
	872	Welders and Flame Cutters
	873	Sheet Metal Workers
	874	Metal Plate & Structural Metal Workers
	879	Plumbers, Welders, Sheet Metal & Structural Preparers & Erectors, n.e.c.

Group	**88**	**Jewellery and Precious Metal Workers and Metal Engravers (Except Printing)**
Families	880	Supervisors. Jewellery & Precious Metal Working
	881	Jewellers, Goldsmiths & Silversmiths
	882	Jewellery Engravers
	883	Other Metal Engravers (Except Printing)
	889	Jewellery and Precious Metal Workers and Metal Engravers,n.e.c. (Except Printing)

Group	**89**	**Glass Formers, Potters Related Workers**
Families	890	Supervisors & Foremen Glass Forming, Pottery & Related Activities
	891	Glass Formers, Cutters, Grinders & Finishers
	892	Potters & Related Clay & Abrasive Formers
	893	Glass & Ceremics Kilnmen
	894	Glass Engravers & Etchers
	895	Glass & Ceramics Painters and Decorators
	899	Glass Formers, Potters and Related Workers, n.e.c.

Group	**90**	**Rubber and Plastic Product Makers**
Families	900	Supervisors & Formen, Rubber & Plastics Product Making

DIVISION 7-8-9. PRODUCTION AND RELATED WORKERS, TRANSPORT EQUIPMENT OPERATORS AND LABOURERS—*Contd.*

	901	Plastics Product Makers
	902	Rubber Product Makers (Except Tyre Makers & Vulcanisers)
	903	Tyre Makers & Vulcanisers
	909	Rubber and Plastics Product Makers, n e c.

Group	**91**	**Paper and Paper Board Products Makers**
Families	910	Supervisors & Foremen Paper & Paper Board Product Making
	911	Paper and Paper Board Product Makers
	919	Paper and Paper Board Products Makers, n.e.c.

Group	**92**	**Printing and Related Workers**
Families	920	Supervisors & Foremen, Printing & Related Workers
	921	Compositors
	922	Type Setters & Photo Type Setters
	923	Printing Pressmen
	924	Stereo-typers & Electro Typers
	925	Engravers, Printing (Except Photo-engravers)
	926	Photo Engravers
	927	Book Binders & Related Workers
	928	Photographic Darkroom Workers
	929	Printers & Related Workers, n.e.c.

Group	**93**	**Painters**
Families	930	Supervisors & Foremen, Painting
	931	Painters, Construction
	932	Painters, Spray & Sign Writing
	939	Painters, n.e.c.

Group	**94**	**Production and Related Workers, n.e.c**
Families	940	Supervisors & Foremen, Production & Related Activities, n.e.c.
	941	Musical Instrument Makers and Tuners
	942	Basketry Weavers & Brush Makers
	943	Non-Metallic Mineral Product Makers
	949	Production & Related Workers, n.e.c.

Group	**95**	**Bricklayers and Other Construction Workers**
Families	950	Supervisors & Foremen, Bricklaying & Other Construction Work
	951	Brick layers, Stone Masons & Tile Setters
	952	Reinforced Concreters, Cement Finishers & Terrazzo Workers
	953	Roofers
	954	Parquetry Workers
	955	Plasters
	956	Insulators
	957	Glaziers
	958	Hut Builders & Thatchers
	959	Well Diggers and Construction Workers, n.e.c.

Group	**96**	**Stationary Engines and Related Equipment Operators Oiler and Greaser**
Families	960	Supervisors & Foremen Stationary Related Equipment Operation
	961	Stationary Engine & Related Equipment Operation
	962	Boilermen & Firemen
	963	Oilers and Greasers (Including Cleaners, Motor Vehicles)
	969	Stationary Engine & Related Equipment Operators, n.e.c.

DIVISION 7-8-9. PRODUCTION AND RELATED WORKERS, TRANSPORT EQUIPMENT OPERTORS AND LABOURERS—Contd.

Group 97 — Material Handling and Related Equipment Operators (Loaders and Unloader)

Families
- 970 Supervisors & Foremen, Material & Freight Handling & Related Equipment Operations.
- 971 Loaders and Unloaders
- 972 Riggers & Cable Splicers
- 973 Crane & Hoist Operators
- 974 Earth Moving & Related Machinery Operators
- 975 Checkers, Testers, Sorters, Weighers & Counters
- 976 Packers, Labellers & Related Workers
- 979 Material Handling Equipment Operators, n.e.c.

Group 98 — Transport Equipment Operators

Families
- 980 Supervisors & Foremen, Transport Equipment Operation
- 981 Ship's Deck Ratings, Barge Crews & Boatmen
- 982 Ship's Engine room Ratings
- 983 Driver's Railways
- 984 Firemen Railways
- 985 Pointsmen, Signalmen & Shunters, Railways
- 986 Tram Car & Motor Vehicle Drivers

DIVISION 7-8-9 PRODUCTION AND RELATED WORKERS, TRANSPORT EQUIPMENT OPERATORS AND LABOURERS—Concld.

Family
- 987 Drivers Animal & Animal Drawn Vehicle
- 988 Cycle Rickshaw Drivers & Rickshaw Pullers
- 989 Transport Equipment Operators and Drivers, n.e.c.

Group 99 — Labourers n.e.c.

Family
- 999 Labourers, n.e.c.

DIVISION X WORKERS NOT CLASSIFIED BY OCCUPATIONS

Group X0 — New Workers seeking Employment

Families
- X01 Workers without Occupations Matriculates and Above
- X02 Workers without Occupations, Literates
- X09 Workers without Occupations, Others

Group X1 — Workers Reporting Occupations Unidentifiable or Indequately Described

Family
- X10 Workers Reporting Occupations unidentifiable or unclassifiable

Group X9 — Workers not Reporting any Occupations

Family
- X99 Workers not reporting any Occupations

APPENDIX NO. 2

I. ARCHITECTS, ENGINEERS AND RELATED WORKERS

02 Architects, Engineers, Technologists and Surveyors

03 Engineering Technicians

II. PHYSICAL AND LIFE SCIENTISTS AND RELATED WORKERS

00 Physical Scientists

01 Physical Science Technicians

05 Life Scientists

06 Life Science Technicians

07 Physicians, and Surgeons, Allpathic, Dental and Veterinary Surgeons.

09 Scientific, Medical and Technical Persons, other.

III. SOCIAL SCIENTISTS AND MATHEMATECIANS

10 Mathematicians, Statisticians, and related workers

11. Economists and related workers

12. Accountants, Auditors and Related Workers

13. Social Scientists and Related Workers

14. Jurists

IV ARTISTS AND OTHER RELATED PROFESSIONALS

16. Poets, Authors, Journalists and Related Workers

17 Sculptors, Painters, Photographers and other related workers

18 Composers and Purforming Artists

19 Professionals not Elsewhere Classified

93 Painters

V   ADMINISTRATORS, EXECUTORS AND RELATED WORKERS

     Division 2: Administrative, Executive and Managerial Workers

VI   CLERICAL AND OTHER RELATED OFFICER WORKERS

30   Clerical and Other Supervisors

31   Village Officials

32.   Stenographers, Typists, and Card and Tape Punching Operators

33.   Bookkeepers, Cashiers and Related Workers

34.   Computing Machine Operators

VII MERCHANTS TECHNICAL SALESMEN & SERVICE MEN & OTHERS

40   Merchants and Shopkeepers Wholesale and Retail Trade

41   Manufacturers and Agents

42   Technical Salesmen and Commercial Travellers

44   Insurence, Real Estate Execurities and Business Service Salesmen and Auctioners

VIII MINERS, QUARRYMEN AND OTHER RELATED WORKRS

71   Miners, Quarrymen, Well Drillers and Related Workers

IX & X PROGRESSING AND RELATED WORKERS (NON. METAL)

73   Wood preparation workers and Paper Makers

74   Chemical Processors and Related Workers

75   Tobacco Prepa   and Products Makers

90   Rubbers and Plastic Product Makers

94   Production and Related Workers, n.e.c.

XI   AIRCRAFT AND SHIPS OFFICERS AND OTHER TRANSPORT
     ENGINEERS

04   Aircraft and Ships Officers

XII TRANSPORT AND COMMUNICATION MEDIA WORKERS

36   Transport and Communications Suppervisors

37   Transport Conductors and Guards

38   Mail distributors ad Related Workers

39   Telephone and Telegraph Operators

86   Broudcasting Station and Sound Equipment Operators,
     Cinema Projectionists

XIII METAL PROCESSORS FURNACE WORKERS AND TOOL MAKERS,
     RELATED WORKERS

72   Metal Processors

83   Blacksmiths, Tool makers and Machine Tools Operators

87   Plumbers, Welders, Sheet metal and others

87   Glass Formers, Potters and Related Workers

XIV TAILORS, WEAVERS, SHOE MAKERS AND RELATED WORKERS

75   Spinners, Weavers, Knitters, Dyers and Related
     Workers

76   Tanners, Felt Mongers, and Pelt Dressers

79   Tailors, Dressmakers, Sewors and Related Workers

80   Shoe makers and Leather goods makers

XV   MECHIERY, JEWELLARY AND PAPER PRODUCT MAKERS

84   Mechinery fitters, Machine Assemblers, and
     Precision Instrument makers

88   Jewellery and Precisons metal workers and Metal
     engrovers

91   Paper and Paper Board Products Makers

XVI FOOD AND BEVARAGE PROCESSORS

77   Food and Bevarage Processors

XVII STONE CUTTERS AND CONSTRUCTION WORKERS

82   Stone cutters and Carvers

95   Bricklayers and other Construction workers

XVIII PROTECTIVE SERVICE WORKERS

57   Protective Service workers

XIX   CARPENTERS, MECHANICS AND OTHER RELATED WORKERS

81   Carpenters, Cabinet and related wood Workers

85   Electrical Fitters and Related Electrical and
      Electronic workers

92   Printing and Related Workers

96   Stationary Engines and Related Equipment Operators,
      Oilers and Greases.

97   Material Handling and Related Equipment
      Operators etc.

XX   TEACHERS

15   Teachers

XXI

08   Nursing and other Medical and Health Technicians

XXII UNSKILLED LABOUR FORCE

35   Clerical and Related workers

43   Salesmen, Shop Assistants and Related Workers

45   Money lenders and Pawn Brokers

49   Sales workers

50   Hotel and Restaurant Keepers

51   Housekeepers matrons, and Stewards (domestic and

52   Cooks, Waiters, Bartenders and Related Workers
      (domestic and

53   Maids and Related Housekeeping Service Workers

54   Building Caretakers, Sweepers, Cleaners and
      Related workers

55   Launderers, Drycleaners, and Pressers,

56   Hair dresses, Barbers, Beauticians and Related Workers

59   Service Workers n.e.c

99   Labourers   n.e.c.

XXIII   FARMERS, FISHERMEN ETC. RELATED WORKERS

Division 6 : Farmers, Fishermen, Hunters, Loggers and Related Workers

XXIV CULTIVATORS

       Cultivators

XXV   AGRICULTURAL LABOURERS

       Agricultural Labourers

These 25 groups of workers are further regrouped into 5 different occupational groups. Those groupings are done basing on the level of skill attainment of the workers.

I   PROFESSIONAL GROUP OF OCCUPATIONAL WORKERS

Groups I Architects, Engineers, and related workers

        II Physical and Life Scientists and Related workers

        III Social Scientists and Mathematicians

        XI TRANSPORT Engineers including Aircraft and Ship officers

        XX Teachers

II   SKILLED GROUP OF OCCUPATIONAL WORKERS

Groups IV Artists and other related Professionals

        V Administrators, Executives, Managers and other related workers

        VI VI Metal Processors, Furnance Workers, Tool makers and Related Workers

XV Mechinary, Jowellary and Paper Product makers

XXI Nursing and other medical and Health Technicians

III SEMISKILLED GROUP OF OCCUPATIONAL WORKERS

Groups VI Clerical and Other Related Officer workers

VII Merchants, Technical Salesmen and Servicemen and others

VIII Miners, Quarrymen and other related workers

IX & X Nonmetal Processing and related workers

XII Transport and Communication Media Workers

XIV Tailors, Weavers, Shoemakers and related workers

XVIII Protective Service workers

XIX Carpenters, Mechanics and other related workers

IV UNSKILLED GROUP OF OCCUPATIONAL WORKERS

XVI Food and Beverage Processors

XVII Stone cutters and construction workers

XXII Unskilled labour force

V AGRICULTURAL GROUP OF OCCUPATIONAL WORKERS

XXIV Cultivators

XXV Agricultural labourers

XXIII Farmers, Fishermen, Hunters, Loggers, etc

APPENDIX NO. 3

MEASUREMENT OF OCCUPATIONAL DIFFERENCE BY SEX

The index suggested by Martin and Poston is adopted
to measure the occupational differentiation by sex. This
index provides controls both on the occupational structure
and sex composition of the working force in the state. Such
a standardization by sex is accomplished by making the
female working force equal to the male working force and then
distributing this number throughout the ten female acceptional
categories according to proportion observed in each female
occupational category.

This each standardised female occupational category
(SF_i) equals its proportion multiplied by the total of the
male occupational frequencies:

$$\left\{ \ ^n M_i \right\} \text{ or } SF_i = \left\{ F_i / \ _{i=1}^n F_i \right\} = \ _{i=1}^n M_i$$

Where "SF " is the standardised female frequency in the
'i' th of 'n' occupational categories. Fi is the actual number
of females in the 'i' th of 'n' occupational categories.

The standardised ratio of actual to expected males
(SRi) has been calculated by the following formula:-

$$SRi = Mi / Mi + SFi)^{.5} \quad \text{or } SRi \ = \ Mi / SFi$$

Where SEi is the standardised expected number of males in the 'i' th of 'n' occupational categories.

If males and females were distributed equally in all occupational categories, all the SEi s' would be 1.00.

(K. L. KOHLI * Regional Variations of Occupational Structure of the Labour Force of India' 1961' Demography India. June 1973, Vol. 1. No. 1

APPENDIX NO. 4

DATA ON DEMOGRAPHICAL VARIABLES

Districts	Density	Growth Rate	Sex Ratio*	Proportion of urban population
1. Bangalore	421	34.38	1099	55.44
2. Belgaum	181	22.16	1056	20.54
3. Bellary	113	22.66	1034	27.15
4. Bidar	151	24.26	1038	14.46
5. Bijapur	116	19.60	1026	21.21
6. Chikmangalur	102	22.23	1067	15.62
7. Chitradurga	129	27.71	1065	20.25
8. Coorg	92	17.18	1099	15.15
9. Dharwar	170	20.01	1057	31.51
10. Gulbarga	107	24.28	1020	17.78
11. Hassa	162	23.05	1027	13.55
12. Kolar	184	17.56	1040	20.65
13. Mandya	233	28.38	1041	13.76
14. Mysore	174	24.28	1062	25.47
15. North Kanara	83	23.14	1045	17.72
16. Raichur	101	28.75	1020	15.36
17. Shimoga	123	27.93	1074	23.61
18. South Kanara	230	24.01	946	20.67
19. Tumkur	153	19.04	1045	11.71
20. Gurdaspur	345	25.32	1123	20.26
21. Amritsar	361	19.64	1168	29.17
22. Ferozepur	188	18.15	1150	19.84
23. Ludhiana	368	28.22	1181	34.81
24. Jullundur	428	18.62	1132	30.06
25. Kapurthala	263	24.94	1124	23.21
26. Hoshiarpur	271	20.78	1112	12.09
27. Ropar	261	15.57	1172	15.15
28. Patiala	265	26.55	1181	26.03
29. Sangrur	225	20.16	1190	20.31
30. Bhatinda	188	22.86	1170	20.00

* Sex ratio have measures number of males per 1000 females

DATA ON ECONOMIC VARIABLES

Districts	Non econo activity rates	% of secon -dary sector workers	% of Ter tiary sector workers	% N.H.H.I. to total Establish ments	% of cultiva ted land	% of irriga ted Land to cultivated land	Productivity per acre (In Rs.)
1	2	3	4	5	6	7	8
1. Bangalore	68.42	24.25	32.60	27.42	53.78	16.96	1120
2. Belgaum	64.52	4.72	13.05	38.67	64.87	10.09	1043
3. Bellary	62.01	8.69	14.83	21.33	52.46	7.49	1085
4. Bidar	67.98	8.01	17.29	24.90	70.72	3.52	878
5. Bijapur	64.64	12.00	12.64	39.97	79.81	3.43	414
6. Chikmagalur	65.39	6.88	16.89	19.67	31.43	13.19	1499
7. Chitradurga	62.83	10.30	12.61	29.28	53.26	15.46	1287
8. Coorg	59.60	8.10	19.36	16.43	29.77	6.91	2186
9. Dharwar	64.50	10.98	18.22	34.16	79.11	5.39	718
10. Gulbarga	65.06	10.18	15.50	25.91	75.50	1.77	464
11. Hassan	68.25	07.03	12.33	19.00	46.20	17.71	1263
12. Kolar	65.09	6.33	11.32	20.54	47.62	23.67	1548
13. Mandya	67.44	6.13	11.17	24.87	57.19	31.51	2425
14. Mysore	66.39	11.08	17.84	26.68	38.23	15.82	1600

1	2	3	4	5	6	7	8
15. North Kanara	66.32	10.12	19.13	24.76	10.49	19.73	1903
16. Raichur	62.78	7.06	13.16	20.59	76.12	9.25	817
17. Shimoga	67.99	11.15	14.78	20.07	26.91	47.26	2178
18. South Kanara	61.39	22.22	18.64	47.35	18.41	39.96	2382
19. Tumkur	65.98	7.45	10.84	28.95	47.80	16.71	1267
20. Gurdaspur	73.57	12.42	27.84	28.63	73.83	51.82	2477
21. Amritsar	70.86	15.04	28.28	27.81	77.53	91.91	2905
22. Ferosepur	70.09	7.52	17.64	26.78	88.42	76.76	2439
23. Ludhiana	70.43	22.23	26.49	38.27	88.25	81.65	3382
24. Jullundur	72.90	20.35	28.34	35.00	83.04	79.93	2673
25. Kapurthala	72.22	16.05	22.12	22.90	70.91	79002	2252
26. Hosiarpur	73.80	13.24	24.72	31.50	63.64	22.42	1882
27. Ropar	71.93	13.25	23.57	36.46	60.45	32.92	2121
28. Patiala	70.64	12.11	23.36	30.54	84.60	64.57	2493
29. Sangrur	68.68	9.22	16.45	37.08	89.07	78.98	2165
30. Bhatinda	69.27	7.38	16.11	33.90	90.20	73.26	2165

* Proportion of Non Household Industries to total Establishment.

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APPENDIX NO.6

DATA ON INFRASTRUCTURAL VARIABLES

Districts	Literacy Rates	Road Density (in Kms)	No of medi -cal Instt per 100 Sq Km	No of post offices per 100 Sq kms	No of hospital beds per 10,000 urban population	No of Electrified Villages
1	2	3	4	5	6	7
1. Bangalore	42.72	99	1.07	3.21	7.46	55.30
2. Belgaum	30.73	59	0.78	3.08	6.00	13.64
3. Bellary	25.12	38	0.93	3.23	2.96	53.80
4. Bidar	20.02	22	0.46	3.85	2.11	35.36
5. Bijapur	27.48	51	0.38	2.98	2.50	19.21
6. Chikmagalur	34.93	83	0.85	2.20	3.04	46.24
7. Chitradurga	31.45	56	0.73	3.01	2.59	53.84
8. Coorg	44.30	83	0.74	3.03	17.48	25.43
9. Dharwar	38.51	64	0.67	2.64	2.96	44.65
10. Gulbarga	18.74	22	0.49	2.39	2.46	19.63
11. Hassan	30.56	94	1.33	3.79	2.67	23.96
12. Kolar	27.06	86	1.05	3.05	4.80	60.40
13. Mandya	22.51	203	1.17	4.34	1.96	46.60
14. Mysore	25.62	91	0.93	2.07	4.10	43.26

1	2	3	4	5	6	7
15. North Kanara	40.65	75	0.79	2.40	2.24	21.00
16. Raichur	20.20	30	0.39	2.80	1.46	19.47
17. Shimoga	36.61	82	0.79	3.04	2.43	48.11
18. South Kanara	43.45	69	1.34	5.26	7.34	59.52
19. Tumkur	29.36	88	0.80	3.68	2.72	41.92
20. Gurdaspur	34.23	37	3.81	6.68	1.65	59.90
21. Amritsar	35.32	32	3.41	8.24	4.85	78.58
22. Ferozepur	27.79	19	1.47	4.00	2.45	31.49
23. Ludhiana	42.63	30	4.32	7.78	2.26	61.92
24. Jullundur	41.30	31	4.74	12.00	1.78	62.03
25. Kapurthala	35.70	25	4.52	5.52	1.73	51.80
26. Hoshiarpur	40.88	23	3.67	9.33	3.07	33.57
27. Ropar	37.17	23	2.97	7.16	2.69	33.10
28. Patiala	31.51	24	2.62	4.08	4.14	46.30
29. Sangrur	24.23	17	1.82	4.30	1.52	50.07
30. Bhatinda	23.60	14	1.48	4.00	1.36	30.41

DISTRIBUTION OF TOTAL LABOUR FORCE IN VARIOUS SKILLL GROUPS

DEVELOPED DISTRICTS	Proportion of workers		Professional		Skilled		Semi skilled	
	M	F	M	F	M	F	M	F
1. Bangalore	88.05	11.95	2.72	0.96	9.89	0.50	22.11	2.39
2. Coorg	71.87	28.13	1.47	0.68	2.91	0.25	8.02	1.18
3. Mandya	87.95	12.05	1.51	0.18	1.97	0.20	5.89	0.50
4. South Kanara	61.44	38.56	1.40	0.61	3.47	0.47	12.77	9.34
5. Gurdaspur	98.15	1.85	1.89	0.80	9.26	0.18	14.63	0.26
6. Amritsar	97.77	2.27	1.70	0.81	7.84	0.27	20.13	0.23
7. Ludhiana	97.78	2.22	2.51	0.97	11.64	0.38	20.86	0.35
8. Jullundur	97.58	2.42	2.44	1.01	11.25	0.17	19.74	0.36
9. Kapurthala	98.17	1.83	1.88	0.85	7.89	0.16	15.62	0.19
10. Hoshiarpur	98.01	1.99	2.21	0.91	9.80	0.20	14.27	0.20
11. Ropar	98.32	1.68	2.52	0.59	6.98	0.25	15.14	0.12
12. Patiala	97.76	2.24	2.06	0.76	6.70	0.43	13.98	0.24
13. Sangrur	98.80	1.20	1.53	0.40	4.73	0.18	11.43	0.15
Total	91.66	8.34	1.99	0.73	7.26	0.28	14.97	1.19

APPENDIX NO. 7

DISTRIBUTION OF TOTAL LABOUR FORCE IN VARIOUS SKILL GROUPS

DEVELOPED DISTRICTS	Unskilled 10 M	11 F	AGR WORKERS 12 M	13 F	WORKER RATES 14 M	PARTICIPATION 15 F
1. Bangalore	16.08	2.27	37.26	5.83	53.09	7.93
2. Coorg	9.28	3.26	50.19	22.81	55.34	23.98
3. Mandya	5.59	0.92	72.98	10.25	56.02	8.13
4. South Kanara	8.77	3.28	35.03	24.85	48.83	28.95
5. Gurdaspur	12.73	0.30	59.64	0.31	49.04	1.03
6. Amritsar	11.40	0.53	56.69	0.38	52.88	1.41
7. Ludhiana	11.52	0.35	51.26	0.16	53.40	1.43
8. Jullundur	12.84	0.55	51.30	0.33	49.79	1.41
9. Kapurthala	10.96	0.42	61.82	0.22	51.52	1.08
10. Hoshiarpur	9.90	0.29	61.83	0.37	48.77	1.10
11. Ropar	10.63	0.35	63.05	0.37	51.15	1.02
12. Patiala	10.47	0.55	64.56	0.26	53.02	1.43
13. Sangrur	6.69	0.29	74.42	0.19	56.95	0.82
Total	10.53	1.03	56.92	5.10	52.29	6.13

LESS DEVELOPED DISTRICTS 1	2	3	4	5	6	7	8	9
1. Belgaum	80.25	19.75	1.41	.25	3.88	0.32	10.63	1.64
2. Bellary	74.74	25.26	1.50	0.15	2.82	0.35	8.76	1.55
3. Bidar	81.79	18.21	1.35	0.16	2.41	0.18	9.48	1.24
4. Bijapur	78.03	21.97	1.61	0.21	2.34	0.16	11.100	2.51
5. Chikmagalur	80.58	19.42	1.54	0.28	2.03	0.14	7.33	0.57
6. Chitradurga	76.93	23.07	1.52	0.13	2.32	0.20	9.17	1.82
7. Dharwar	71.76	28.24	2.28	0.40	4.15	0.35	15.29	2.70
8. Gulbarga	79.33	20.67	1.31	0.16	2.27	0.20	8.98	1.99
9. Hassan	86.72	13.28	1.74	0.24	1.81	0.14	7.03	0.77
10. Kolar	82.03	17.97	1.30	0.31	2.33	0.16	9.04	0.88
11. Mysore	86.43	13.57	1.64	0.52	2.72	0.23	10.45	1.43
12. North Kanara	80.10	19.90	1.90	0.47	30.40	0.23	10.83	1.74
13. Raichur	77.40	22.60	1.09	0.08	1.91	0.20	7.36	1.19
14. Shimoga	83.64	16.36	2.18	0.26	4.55	0.19	9.36	0.82
15. Tumkur	84.59	15.41	1.60	0.20	2.04	0.15	7.23	1.42
16. Firozepur	98.34	1.66	1.59	0.58	4.07	0.12	11.31	0.17
17. Bhatinda	98.69	1.31	1.63	0.40	3.56	0.14	11.01	0.19
Total	82.43	17.57	1.60	0.28	2.86	0.20	9.66	1.33

1	10	11	12	13	14	15
LESS DEV DISTRICTS						
1. Belgaum	5.79	0.67	58.53	16.87	55.44	14.40
2. Bellary	8.49	1.89	53.17	21.32	55.81	19.55
3. Bidar	7.70	1.62	60.85	15.02	52.86	12.41
4. Bijapur	5.57	1.00	57.51	18.08	54.78	15.85
5. Chikmagalur	8.84	2.55	60.85	15.68	53.88	14.04
6. Chitradurga	6.22	1.46	57.69	19.48	55.44	17.71
7. Dharwar	10.84	1.42	39.20	23.38	54.01	15.94
8. Gulbarga	7.85	1.85	58.92	16.46	54.82	14.68
9. Hassan	6.12	1.37	70.04	10.75	54.29	8.61
10. Kolar	5.21	0.88	64.14	15.75	56.16	12.80
11. Mysore	9.10	2.19	62.46	9.20	56.16	9.66
12. North Kanara	9.38	2.21	54.59	15.25	52.79	13.70
13. Raichur	6.71	1.49	60.34	19.64	57.05	17.01
14. Shimoga	7.34	1.37	60.20	13.72	51.71	10.86
15. Tumkur	4.63	0.91	69.08	12.74	56.30	10.73
16. Firozepur	6.77	0.24	74.60	0.54	55.01	1.06
17. Bhatinda	6.02	0.26	76.48	0.32	56.25	0.98
Total	7.21	1.38	61.00	14.38	54.87	12.35

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