FEMALE WORKFORCE PARTICIPATION
IN
EASTERN INDIA
. A SOCIO—ECONOMIC ANALYSIS (1971-81).

Dissertation submitted to the Jawaharlal Nehru University
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Certified that the dissertation entitled
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C H A P T E R - I

INTRODUCTION

CHAPTER - I

INTRODUCTION

From time immemorial socio-economic characteristics of most societies have traditionally designated the family as the central focus of a woman's life, while the provision of material and money support has been assigned to man. In ancient India particularly during the vedic period women enjoyed high status in home as well as outside. But gradually they lost this status due to some social restraint like, purdha, child marriage, sati, dowry, and other religious taboos and social customs. The social reform movements in the nineteenth century and the struggle for political independence 'in the twenteeth century made the women advance a step further in attaining some what better status than before with men in some respects. No doubt females in the rural areas worked with men in the field in the past and continue to work now, however, (their participation is restricted to a selected number of jobs. In the early stages of industrialisation they joined the labour force in plantation, factories and mines with rural base out of economic consideration. Now women are coming out of their home to participate in economic activities which were once looked with disfavour.)

Even today the religious taboos and social
customs along with sex discrimination restrict the
economic activity of females in the Indian society.
However, the situation is fast changing and women,
inspite of these constraints are gradually partici-
pating in the economic activity in greater numbers,
thus staging an uphill struggle for their rights and
are working with enormous zeal for the development of
the country with men.

International Scenario:

Since economic development of any country depends
upon its workforce participation, among other factors,
women workforce participation has its own importance. In
case of the developed countries the female workforce
participation rates are not far behind their male counter-
parts whereas, in the developing and underdeveloped
countries, female participation is very low in compari-
son to their counterparts in the developed countries.
One can also find variation of female participation rates
among the developed and ___ among the developing and
underdeveloped countries. If a comparison between West
and East European countries is made, one finds a difference
of 10 to 20 percent, being consistently higher in case of

the latter countries (Bowen & Finegan quoted in EP.W:
1975:35). Could it be concluded that the political
background determines the female participation in work-
force in these countries. Looking into the differences
in this respect that exist between the two parts of
Germany it can be concluded that the work ethos in the
centrally planned economics encourage is such as to
promote female workforce participation (Gulati, 1975:35).

A comparison among the agricultural countries
indicates a wide range of differences of female work-
force participation. Though most of these countries
are having participation rates below the developed count-
ries, there are some that have participation rate
comparable with the developed ones. (Economic factor is
not the only factor which influences the female work-
force participation but certain socio, demographic and
cultural factors also influence it.) These agricultural
countries can be classified into four groups. In the
first place the Islamic countries will be considered,
where "age old Islamic tradition of keeping women behind
the veil may well be still a factor responsible for low
female participation in workforce". (Gulati, 1975:36)
Here the participation is below the 10 percent level.

Most of the Latin American countries fell into the second category having female workforce participation rate between 10 to 20 percent. Possibly cultural factors associated with catholic tradition of Latin America may explain the level of female participation. It should also be noticed that two non-catholic countries like India and Sri Lanka fall in this category (Bowen & Finegan quoted in E.P.W: 1975: 36).

"The third group is dominated by the South East Asian countries with the participation rate between 20 to 30 percent. Here we find the female as an active worker who must carry a large share of the burden of work in the family farm and who may occasionally work for others" (Easter Boserup quoted in E.P.W.: 1975:36).

Fourth group comprises the non-muslim African countries showing very high participation rates. These are the countries with strong farming tradition. In these countries, one can also find females ploughing in the field. Zaire is one of these countries where FWPR is 49.6 percent (Gulati, 1975:36).

Broad Macro Features of India:

According to 1971 census information females

comprise 17.4 percent of the workingforce. This works out to an overall labour working force participation rate of 11.8 percent for women of all ages. About 83 percent of the female working force is in agriculture and related sector; about 94 percent of them are in the unorganised sector (Mukhopadhayay, 1976:96).

The differences in the female workforce participation rates among states and within the states are quite large. Firstly, among the 17 major states, the participation rate varies from 1.67 in Punjab to 25.24 percent in Andhra Pradesh. Secondly, within the wide range of differences one can see most of the patterns prevailing in the underdeveloped countries of the world. Again, none of the states have their participation rate above thirty percentage point. We have seven states showing very low participation rate i.e. rates falling below 10 percent. These are more in the pattern of Islamic countries showing rather low participation rates. These include the four northern states, Punjab, Haryana, J & K and three eastern rice growing states of W. Bengal, Orissa and Assam. The pattern is similar to the Islamic tradition which may be due to the muslim domination, political as well as cultural, for several centuries. Then we have states with female participation similar to the Latin American countries i.e. 10 to

20 percent. This comprises three southern states, one central state two western states and one eastern state (Bihar). Those states whose participation rate were below 30 percent but above 20 percent resemble the South East Asian countries. In this group, we have Andhra Pradesh from the south, Himachal Pradesh from the north, and Maharastra from the west (Gulati, 1975: 36).

Relevance of the Study:

In the national objective of self reliance and rapid economic development, women are expected to take a greater role. This can only be possible when additional emphasis is given to human resource development along with social justice. Hitherto the age old image of woman, particularly in the traditional societies where she was more identified as a housewife than an active bread winner, has to be reexamined. Confinement to the four corners of wall, domestic burden and obsession with household activities do not encourage the direct women involvement in the process of economic development.

Since the time has changed with the onset of industrialisation, spread of literacy, inculcation of new ethos etc., it warrants that a fresh look be taken

at their position in society. It has been seen
that in recent decades there has been an appreciable
rise in the female employment. In order to understand
clearly female participation in workforce, it becomes
imperative to know the factors which have a close
bearing on their accessibility to work. It is gene-
rally believed that a host of economic, cultural,
social and demographic factors regulate the female
entry into labour market. Since these elements are
not mutually exclusive and vary in their rigour at
microlevel, a spatial anslysis has to be undertaken
to explain the variability in female workforce parti-
cipation. rate.

In the subsequent analysis a study will be
attempted to examine the role of each such factors
and to uncover their effect at local level.

The earlier works:

Problems in female workforce participation led
many faminists, sociologists, demographers and econo-
mists to put forward their idea on female at work.
There are numerous studies in this respect. These
writers generally tried to focus on the problem in

female workforce participation and the factors that are affecting it.

Boserup (1970) studied the influence of economic development and modernization in the female workforce participation rate in developing countries. She explained that modernisation has had a negative effect on the female workers both in agriculture as well as in industry) According to her the downward trend in female workforce participation is due to the increased incomes which is a result of economic development.

Doughlas (1939) based the theory on the supply side of the female labour. He explained his idea through the example of united Kingdam where low wages were associated with high female participation, and United States of America where high wages were associated with the low proportion of women at work. He also showed a negative relationship between the income level and workforce participation of female.

Mies (1977) explained the role conflicting aspect of the Indian women. She explained the various

roles (the roles being conflicting in nature) the Indian woman has to play i.e. the role of house-wife, mother and working woman.

Weller (1968) studied how far industrialization affects workforce participation of women. According to him, it is natural that industrialisation will create new jobs for women, but this does not compensate the decline in female workers in more traditional industries.

Gore (1968) explained that conjugal relationship and exclusion of women from economic activity reduced their status in the society and resulted in low female participation in workforce. Srivastav (1978) explained the factors that are responsible in bringing out some of the married females to the workforce. She also explained how the participation of married females affected their socio-economic life and changed their life style.

Gulati (1975), while showing inter-state disparity in female workforce participation, showed the relationship between economic and demographic

variables like per capita income, cropping pattern, literacy level, male workforce participation, proportion scheduled castes and scheduled tribes population and sex ratio and female workforce participation.) However, she could not find out any significant relationship between these factors and female workforce participation, with the exception of sex ratio which had a significant relationship.

(Reddy (1975) studied the factors that affect female workforce participation rates in rural areas. He took into consideration factors like irrigated area, average annual rainfall, crops grown, and agricultural labour productivity, and showed that all the factors except the cropping pattern has a negative relationship with the female work participation in rural areas.)

/Ranadive (1976) based her analysis on the problems of female workers in Indian industry. Limiting her analysis to organised sector she depicted the problem of shrinking number of female workers, sex discrimination in case of wage and jobs, and non-implementation of protective laws for female workers.

(Bardhan (1978) discussed the employment and

unemployment characteristics of rural women in West Bengal. The factors that affect the female work participation, according to him, are high participation among the low caste and tribe females, wage response, number of adult males in the family, the size of household farm, and mental status of the female.

Sawant and Dewan (1979) associated declining female workforce participation, widening male-female wage rates and literacy of females to economic development. According to them, the first two factors may gradually bring down the status of women. In their opinion increased education may not be sufficient enough to bring up the status of women, since education is confined to the upper class females and the educated women have to face stiff competition in the job market.

Location and Land:

The present study covers the eastern region comprising Bihar, Orissa and West Bengal.

TABLE - 1

Geographical Profile of the Eastern Region (1981).

States	Population	Area (in Sq.Km.)	Percentage to All-India population	Percentage to All-India Area
Bihar	6,98,23,154	173,876	20.2	5.3
Orissa	2,62,72,054	155,842	3.8	4.7
West Bengal	5,44,85,560	87,853	8.0	2.7
Eastern Region	15,05,80,768	417,571	22.0	12.7
India	68,51,54,692	3,289,263	–	–

Bihar:

A completely landlocked state of eastern India surrounded by Orissa in south, West Bengal in east, Uttar Pradesh in west and in north it has international border with Nepal. It is the second most populous state in the country and ranks ninth in the total area. The state has been divided into thirty one districts from administrative point of view.

Although located in Ganga basin, in this
state agriculture has not made any substantial progress.
The principal food grain crops of the state are rice,
wheat, maize and pulses and the main cash crops are
jute, sugarcane and oil seeds etc. Forests cover
about 19 percent of the total geographical area of the
state and the forest products are lac, timber, Sal-seeds
and gums, while the northern and southern Ganga plain
are relatively rich in agriculture, the southern plateau
is rich in mineral resources and has many of the state's
important industries.

The state has a very sound industrial base.
India's first steel plant is located at Jamshedpur
alongwith the automobile plant. There is heavy
engineering industry at Ranchi. However, the rich
industrial potential of the state lies in its mineral
resources, the chief minerals being coal, iron.ore,
mica, copper, and dolomite. The major power projects
of the state are Patratu & Barauni Thermal Power
Station. The state also has a major share in the
power production at Damodar Valley corporation.

But it is unfortunate that inspite of a viable

potential of natural resources it is one of the most backward states of Indian Union.

Orissa:

Orissa lies on the east coast of India. It is surrounded by West Bengal on the northeast, Bihar in the north, Andhra Pradesh on the south, Madhya Pradesh on the west and Bay of Bengal on the east. The whole state is divided into four tracts of northern Plateau, the eastern states, the central tract and the coastal plains. The state has been divided into thirteen districts. The main rivers of the state are the Mahanadi, the Brahmani and the Baitarani.

Rice and pulses are principal food grain crops and jute, coconut, oilseed, sugarcane etc. constitute the cash crop produce of the state.

Orissa's vast mineral resources like coal, iron-ore, manganese, nickel are extracted from mines of Talcher, Sukinda, Badampahar and Rampur. Thermal power generation at Talcher and hydro-power production at Hirakud cater to the energy needs of the industries of the state. Public sector steel plant at Rourkela,

paper mill at Choudwar and Brajraj Nagar, textile mill at Choudwar and the Alumina complex at Damanjori etc. are some of the vital industries of the state.

The industrial development of the state is a recent one unlike that of Bihar and West Bengal where pre-independence industrialisation was quite substantial. In spite of rich resources, Orissa is one of backward and poverty stricken states.

West-Bengal:

The state is bound by Sikkim and Bhutan on the north, Bay of Bengal on the south, Assam and Bangladesh on east and Orissa, Bihar and Nepal on the west. It stretches upto Himalayas in the north. While the northern West Bengal is hilly, the southern and central Ganga plain are fertile and developed. The state has been divided into sixteen districts.

The state is a leading rice-producer in the country. Two important cash crops of the state, earning maximum foreign revenue are jute and tea.

West Bengal is one of the few industrially advanced states in India from point of view of both small and large scale industries. The haulage of minerals especially coal in the Raniganj belt occupies a special position in the industrial achievement of the state. The iron and steel factories at Asansol and Durgapur, Petrochemical complex at Haldia and Kalyani constitute the industrial infra-structure of the state. The industries are fed from power stations of Damodar Valley Corporation and Mayurakshi Project.

Recently there has been an appreciable decline in the industrial environment of the state, the reasons for which can be traced to, the labour unrest and power-shortage, etc.

Data base of the Study:

The data for the analysis of female workforce participation is mainly based on the Economic Tables (B series) of the Indian census 1971 and 1981. Data for the socio-demographic indicators were taken from the Indian census while the Economic Surveys, Statistical Abstracts of the respective states were referred

for some of the economic indicators. Since the study
is based on districtwise analysis, in 1971 data for
46 districts of eastern India, comprising Bihar, Orissa
and West Bengal were collected, which became 60 in 1981.
The data for this analysis were confined to the following
tables of Indian census 1971 and 1981:-

    i)   Workers and non-workers according to main
            activity classified for age and sex, rural
            and urban areas, Table - B-I Part-A in 1971
            and B-3 in 1981.

    ii)   Industrial classification of workers by
            educational attainment, B II Part-A & B
            in 1971 and B-4 Part- A & B in 1981.

    iii)   Industrial classification of persons at
            work and non-workers by sex, for scheduled
            castes rural and urban areas only.
            Table SC-I, Part - A & B.

    iv)   Industrial classification of persons at work
            and non-workers by sex for scheduled tribe
            rural and urban areas only.
            Table ST I, Part - A & B.

v. Census Atlas of Bihar, Orissa and West Bengal for 1971.

vi. Eastablishment tables in 1971 census.

Chapter Outlines:

i) In the next chapter the various methods those are adopted in the study will be discussed.

ii) In the Chapter III the pattern of female workforce participation in the three eastern Indian states will be analysed.

iii) The next chapter will study the degree of variation that was present in FWRR in these states. In this chapter the possible factors that might have affected the FWPR will be discussed theoritically.

iv) In chapter-V, the final analysis of some of the socio-economic and demographic factors effecting FWPR will be tested, through the quantitative method of multiple regression.

v) The final chapter views the entire analysis with a critical perspective, gives a summary findings and recommends policy actions.

C H A P T E R - II

METHODOLOGY

CHAPTER-II

METHODOLOGY

Definition of worker and workforce:

While considering the economic aspect, the entire population of a country is classified into two broad categories according to the type of its activity — the economically active and . econo- mically/active (Bhende, & Kanitkar, 1982:372). In this regard, the recommendation of the United Nations as follows, "An economically active population comprise all persons of either sex, who furnish the supply of labour available for the production of economic goods and services during the time reference period chosen for the investigation. It includes both the person in the civilian labour force and those serving in the armed forces" (U.N., 1967: 62-63).

'Worker' in the Indian Census 1971 & 1981:

Income earning criterion was applied for the definition of workers until and including 1951 census where the population was divided into three categories; earners, earning dependents and non

earning dependents. But in 1961 the 'income' concept was given up and in its place, the 'worker' concept was adopted. Here the population was divided into two broad categories of 'workers' and 'non workers'. However, the definition of 1961 was very liberal in the way that it included both full time workers and marginal or secondary workers under the scope of workers. In 1971 census the concepts of 'workers' and 'non workers' were kept intact but a distinction was made between a persons' main activity and secondary activity (Gulati, 1975: 1692). Only a person engaged in an economic activity as his main activity was classified as worker. Thus according to 1971 census "a worker was a person whose main activity was participation in an economically productive work by his physical and mental activity" (Census of India, 1971$_a$).

(The 1981 census defined work as "participation in any economically productive activity. Such participation may be physical or mental in nature. Work involves not only actual work but also effective supervision and direction of work" (Census of India, 1981$_b$:   ). Unlike 1971 census, the 1981 census divided the entire population into three categories

i.e. main workers, marginal workers and non-
workers. Main workers were those persons who were
engaged in economically productive activity for
the major part of the year i.e. more than six
months or 183 days. While "marginal workers"
were defined as those who might have worked any
time in the year preceding the date of enumera-
tion but worked less than the prescribed 183 days
or over six months. Non-workers were those who
did not participate in the economically productive
activities.

There are also various instructions given
in this census as to whom to include as workers. In
case of a person who was engaged more than six months
in not a single economically productive activity,
but in various activities then, in that case, the
activity where the person spent most of the time
will be considered as his main activity.

A person who fulfils the definition of
worker but was absent at the time of enumeration
due to some reason will also be considered as
worker.

Persons who are engaged mainly in house-
hold works or are students but have helped in the
family's economic activities, would not be consi-
dered as main workers but would be treated as
marginal workers.

A person who works in the household, if
produces some economic goods for personal consump-
tion will not be treated as worker. Money lenders,
pensioners and like persons will not be considered
as workers.

Changing Concept:

Prior to the 1961 and 1971 census, the 'income'
or 'economic independence' concept was adopted while
defining workers. In 1961, this concept was replaced
by the concept of "economic activity" and the 1971
census followed the same.

"The criterion for classification of persons
as workers underwent changes. While in 1971 census
dual approach, namely 'usual status' and 'current
status' was adopted with a reference period

of one year and one fortnight in 1961 and one week
in 1971 for regular work, at the 1981 census the
'usual status' was adopted uniformly for all work",
(Census of India, 1981;).

In 1981, the concept of marginal workers was
introduced only to make it comparable with the 1961
census. Thus it is possible now to make a compari-
son between the main worker of 1971 and 1981. Again
the workers of 1961 can be compared with the combined
main workers and marginal workers of 1981 Census
(Census of India, 1981;).

Methodology of Study:

In this study following quantitative techni-
ques have been adopted to analyse the pattern of
female workforce participation and the factors that
may affect it.

In chapter III the pattern of female work-
force participation and the sectoral shifts of the
female workers are shown with the following
techniques:

i) Overall workforce participation
rate of females:

This is the proportion of female workers
to the total female population i.e.

$$FWPR = \frac{\text{Total Female Workers}}{\text{Total Female population}} \times 100$$

ii) Sex composition of the workforce:

This technique was adopted to compare
the workforce participation rates of males
and females. This showed the percentage share
of female and male workers in the total work-
force i.e.

For Female;

$$\frac{\text{Total Female Workers}}{\text{Total Workers}} \times 100$$

For Male:

$$\frac{\text{Total Male Workers}}{\text{Total Workers}} \times 100$$

iii) Workforce participation of working
age female:

This method has been adopted to show

the percentage of female workers in the working age group 15-59 i.e.

$$\frac{\text{Female Workers}_{(15-59)}}{\text{Female Population}_{(15-59)}} \times 100$$

All these three methods have been applied in the study to give a detailed account of the female workforce participation pattern.

In order to show the structural or sectoral change that took place in the decade from 1971 to 1981 the percentage of female workers in the three economic sectors were calculated. In both the 1971 and 1981 censuses the main workers are classified into the following nine categories:

i) Cultivators

ii) Agrilcultural labourers

iii) Live stock, forestry, fishing etc.

iv) Mining and quarrying

v) Manufacturing, processing, servicing and repairing.

a) Household industries

b) Other than household industries.

vi) Construction

vii) Trade and commerce

viii) Transport, storage and communication

ix) Other services.

First all the nine main categories of workers given in the 1971 and 1981 censuses were grouped into three economic sectors i.e. primary, secondary and tertiary.

In the primary sector the first four categories i.e. I, II, III and IV are included, while the next two categories V (a) and V (b) and VI are included in the secondary sector. The tertiary sector includes VII, VIII and IX categories.

After grouping the nine categories into three sectors, the percentage of female workers in each sector was calculated. To show the sectoral shift of the female workers from 1971 to 1981 the districts were divided into two board groups.

They were:

a) Developing districts where the propor-
tionate share of the workforce in the
primary sector showed a decline, and

b) Declining districts where the propor-
tionate share of the female workforce
in the primary sector showed an
increase.

These two were further classified into three
categories each. The developing districts were
divided into:

i) districts where the proportionate share of
the primary sector declined but share of
both secondary and tertiary sector increased
$(P\downarrow S\uparrow T)\uparrow$; (

ii) districts where the proportion of female
workers in both primary and secondary sectors
declined and that of the tertiary sector increased
$(P\downarrow S\downarrow T)\uparrow$;

iii) districts where the share of the female
workers in the primary and tertiary sectors
increased and that of secondary sector declined
$(P\downarrow S\uparrow T)\downarrow$ in case of the declining districts the
six sub-category districts were just the opposite.

Degree of variation in FWPR:

It is always thue that the FWPR is different among different states and this difference also present within the states. In Chapter IV, to find out the degree of variation the statistical techniques of standard deviation and coefficient of variation have been applied. The formule applied for standard deviation is:

$$= \sqrt{\frac{1}{N} \sum f_i^n (x_i - \bar{x})^2}$$

Where N = Number of districts

X = Female ework participation rates

and

for coefficient of variation it is

$$= \frac{\sigma}{\bar{x}} \times 100$$

Where σ = standard deviation

$\bar{x}$ = Mean

These two techniques were applied to find out the variation in total FWPR and FWPR in the three sectors separately.

Multiple regression to show the factors effecting FWPR:

In chapter V, the factors that may affect the FWPR are examined. The FWPR always depends upon some of the socio, economic and demographic factors. So in order to show how far these factors effect the FWPR the quantitative technique of multiple regression was applied. This technique is useful in this study so far it helped to show the combined effect of the factors on FWPR and how far they effect it individually. The following explanatory variables were taken to study how much the FWPR depends upon them.

    i)   Male workforce participation rate

    ii)   Percentage of scheduled caste females to total females.

    iii)   Percentage of scheduled tribe females to total females.

iv) Literacy rates ✓

v) Sex ratio ✓

vi) Young dependency ratio

vii) Old dependency ratio

viii) Average size of the household

ix) Degree of urbanisation

x) Percentage of irrigated area

xi) Cropping pattern (special case of area under rice)

xii) Number of industries per 100,00 population.

Taking these twelve explanatory variables (independent) and the female workforce participation as dependent variables, a regression equation (taking district level cross section data) is calculated for the three states separately. In case of all these states regression equations were calculated for total, rural, and urban areas separately.

The formula applied for this analysis was:

$$Y_i = \beta_1 + \beta_2 X_{2i} + \beta_3 X_{3i} + \beta_{ki} + U_i, \quad i = 1, 2, \dots\dots n$$

Y = dependent variable

K-1 independent variables X_1, X_2, X_3 ..... X_k

$Y = X + U,$ to reducing n equation to matrix form

$$Y = \begin{bmatrix} Y_1 \\ Y_2 \\ Y_n \end{bmatrix}$$

$$Y = \begin{bmatrix} 1 & X_{21} & X_{31} & \dots & X_{k1} \\ 1 & X_{22} & X_{32} & \dots & X_{k2} \\ 1 & X_{2n} & X_{3n} & \dots & X_{kn} \end{bmatrix}$$

$$\beta = \begin{bmatrix} \beta_1 \\ \beta_2 \\ \beta_3 \end{bmatrix}$$

$$\text{and } U = \begin{bmatrix} U_1 \\ U_2 \\ U_k \end{bmatrix}$$

applying principal of least square to estimate co-efficient of eq. 1

$$\hat{\beta} = (X^T X)^{-1} X^T Y$$

are estimates of   and are the best unbiased linear estimates of   provided the random element U fulfills.

a)   mean of random term $\bar{U} = 0$

b) Any, random term U_i is independent of any other random term U_j

c) Variance of U is constant (condition of homocendarcity)

d) The independent variables have no exact linear relationships among themselves. i.e. rank of X is K

Testing:

Var. $(\hat{\beta})$ = $\sigma u^2 (x^T x)^{-1}$ and $T_i = \dfrac{\beta_i}{\text{Standard Error } (\beta_i)}$

will follow 't' distribution with (n-k) degree of freedom.

Unbiased estimates of $u^2 = \dfrac{y^T Y - \hat{\beta} x^T Y}{n-k}$

Here u^2 is a constant which when multiplied by the first diagonal terms of $(x^T x)^{-1}$ gives the square of S.E. of $\hat{\beta}_1$, the second diagonal term will give the square of S.E. of   etc. If 't' values of   are insignificant then the population values of   may be considered as zero in the whole population.

Coefficient of determination R^2

$$R^2 = \frac{\hat{\beta} \, x^T \, Y - \frac{(\sum Y)^2}{N}}{Y^T \, Y - \frac{(\sum Y)^2}{N}}$$

numeretor = Explained sum of squares.

denomenetor = Total sum of squares.

F-Test: Null hypothesis $\hat{\beta_1} = \hat{\beta_2} = \hat{\beta_3} = \text{------} = \hat{\beta_k} = 0$

$$F = \frac{R^2/(K-1)}{(1-R^2)/(n-k)}$$ for $(K-1, \ n-k)$ d.f.

If value of F is insignificant the population values of all the regression coefficient are zero i.e. null hypothesis holds. Explanatory power of the whole model is almost nil.

$$\bar{R}^2 = \left[- \frac{n-1}{n-k} \ (1-R^2) \right.$$

Multicolinearity :- S.E. of one of the two types corelated variables will be overestimated and the S.E. of the other variable will be underestimated. Test of significance hence is unreliable.

Limitation of the Study:-

No one can doubt the significant diversity present in the female work force participation in eastern India. This diversity is present in every aspect of the workforce participation of female in this region. In the present study, while studying the factors effecting working females and their participation, some socio economic and demographic factors are undertaken. But due to non-availability of data, some of the basic economic factors are not taken into consideration. It is true that while calculating multiple regression one always needs the exact independent variables that effect the dependent variable to find out significant result.

From this dimension this study is a limited one. No doubt some of the socio-economic and demographic factors were considered to highlight the subject but they are not sufficient to arrive at any definite conclusion.

Secondly this study is based mainly on the census data, which is somewhat not enough to get right picture as the possibilities of under-count is there. Again some of the data relating to socio-cultural and psychological aspect are not available from the census which could have make our analysis some what more meaningful. Since the study was based on the female workforce participation the possibility of undercount will affect the analysis as the undercount is more in case of females.

TABLE 2.1 : Adjustment of Areas of Districts of 1981 Census according to 1971 Census in Bihar

Districts of 1971	Area in sq.km.	Districts in 1981 and Respective Areas in sq.km.						Total area sq.km.	Area difference from 1981 sq.km.	% difference to area in 1971	Urban area of the districts in 1981 sq.km.
		Distt.	Area	Distt.	Area	Dist.	Area				
1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.
Patna	5528	Patna	3202	Nalanda	2367	-	-	= 5569	+41	+0.74	262.7
Gaya	12344	Nawada	2494	Gaya	6545	Aurangabad	3305	=12344	0	0.0	157.5
Sahababad	11320	Rohtas	7213	Bhojpur	4098	-	-	=11311	-9	-0.07	174.7
Saran	6952	Saran	2641	Siwan	2219	Gopalganj	2033	= 6893	-59	-0.84	105.0
Champaran	9196	PB Champara	3968	PC Champara	5228	-	-	= 9196	0	0.0	96.9
Muzzafarpur	7838	Muzzafarpur	3172	Sitamarni	2643	Vaishali	2036	= 7851	+13	+0.16	90.7
Dharbhanga	8679	Samastipur	2904	Dharbhanga	2279	Madhubani	3501	= 8684	+5	+0.05	51.2
Monghyr	9827	Monghyr	7908	Begusarai	1918	-	-	= 9826	-1	-0.01	221.0
Bhagalpur	5656	Bhagalpur	5589	-	-	-	-	= 5589	-67	-1.18	73.2
Saharsa	5885	Saharsa	5900	-	-	-	-	= 5900	+15	+0.25	94.6
Purnea	11013	Purnia	7943	Katihar	3057	-	-	=11013	0	0.00	237.1

1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.
Santal Pargana	14129	Santal Pargana	14206	–	–	–	–	= 14206	+77	+0.54	115.5
Palamau	12677	Palamau	12749	–	–	–	–	= 12749	+72	+0.56	69.6
Hazaribagh	18060	Giridh	6892	Hazari-bagh	11165	–	–	= 18057	–3	–0.01	365.9
Ranchi	18331	Ranchi	18266	–	–	–	–	= 18266	–65	–0.35	361.6
Dhanbad	2994	Dhanbad	2996	–	–	–	–	= 2996	+2	+0.06	441.9
Singhbhum	13447	Singhbhum	13440	–	–	–	–	=13440	–7	–0.05	279.4
BIHAR	173876	–	–	–	–	–	–	=173877	+1	+0.0005	3198.5

CHAPTER - III

PATTERNS OF FEMALE WORKFORCE PARTICIPATION IN EASTERN INDIA

CHAPTER-III

PATTERN OF FEMALE WORKFORCE PARTICIPATION

The pattern of female participation rate varies widely from country to country, from region to region of particular country and even among states. In the developed countries women are not much behind men in workforce participation. The participation rate of women for some developed countries like Sweden, Denmark, Japan, and France in the seventies was as high as 55.2, 53.5, 49.9 and 48.4 percent respectively. (OECD, 1975:11). But in underdeveloped and developing countries the women fall far behind the men in worforce participation. In case of India, a developing country, the percentage participation rate for female in workforce is as low as 11.9 percent in 1971 compared to male participation of 52.5 percent.

The present study is based on the female workforce participation in Eastern India. Here the participation rate (6.9 percent in 1971 & 8.2 percent in 1981) is below the national level (11.9 percent in 1971 & 13.2 percent in 1981)

This FWPR is very low when a comparison is made
with the male participation rate of 51.5 percent
and 49.9 percent in 1971 and 1981 respectively.
In order to have a more clear and comparative
picture of workforce participation, the sex
composition of the workforce is analysed which
shows that, in eastern India, in 1971 out of
every 100 workers 89 were males while only 11
were females. But in 1981 there was a definite
increase in female participation since their pro-
portion among workers increased to 13.4 percent.
(Table - 9)

This is all about total participation rate,
but while taking into consideration the place of
residence, there is marked rural-urban differen-
tial in female workforce participation rate. Here
one can see from the table -3
(that both male and female participation rates are
very high in rural area in comparison to urban
area.) In eastern region in 1971 the female work-
force participation rates were 7.3 and 4.4 per-
cent for rural and urban areas respectively. The
same pattern was also observed for male workers,

while the place of residence was considered. Some
of the plausible reasons for this pattern of rural
biased female workforce participation in this
region could be that the women find work easily
in rural areas in family farms. Even when work
has to be done outside the family farms it can be
found in the neighbourhood. But in the urban
sector, on the other hand, the work opportunities
are restricted by the fact that women have to work
outside the family which may be far away from their
place of residence. Again unlike the rural area, the
urban women have to compete with men for the job in
labour market. The jobs available in rural areas
are rudimentary and do not require any formal training
as seen in case of urban areas. The demand for
female labour in rural areas is also more because
the wage rate which the female labour agrees is
low in comparison to that demanded by their male
counterpart. Additionally, from the domestic point
of view the upbringing of the children becomes
easier on the part of rural females, as they can
take their children to the farmsite along with
them.

For detailed discussion of the pattern of
female workforce participation, the sectorwise
distribution (i.e. primary, secondary and
tertiary) of females workforce is considered,
and the percentage female workers engaged in each
sector with due emphasis to rural urban character
has been calculated. (In 1971, in eastern India
the percentage of female workers in primary sector
was as high as 84.2 percent while that in the
secondary and tertiary sectors was as low as 6.2
and 9.9 percent respectively. In rural area the
concentration of female workers was even more in
primary sector 90.3 percent and as low as 5.1 and
4.6 percent for secondary and tertiary sectors
respectively. But in urban areas the concentration
of the female workers was more in tertiary sector
(62.6 percent) while agriculture sector comes next
(with 19.7 percent) and secondary closely follows
it (17.2 percent). In 1981, the picture was the
same, as the concentration in primary sector –
both in total and rural, were more (81.5 and 88.2
percent respectively). In case of secondary sector

for the total and rural area the FWPR was as low as 8.6 and 9.9 percent respectively. This was also low in tertiary sector. In this sector for total and rural area it was 7.4 and 4.4 percent. (Table - 6)

From the above analysis in eastern India, one finds the following features of the pattern of female workforce participation.

i) Female workforce participation is very low in comparison to male participation rate.

ii) Participation rate of female in rural area was more than participation in urban area.

iii) Increase in the participation of female in workforce from 1971 to 1981.

iv) In rural area the concentration of female workers was more in primary sector and very low concentration in the other two sectors.

v)   In case of urban area the concentration was more in the tertiary sector and low in case of primary and secondary sectors.

vi) From 1971 to 1981 there was a shift of the female workers from primary sector to secondary and tertiary sector i.e. primary sector declined.

FEMALE WORKFORCE PARTICIPATION PATTERN —
STATE AND DISTRICTWISE ANALYSIS:

At the interstate level, Bihar, Orissa and West Bengal show a wide divergence in the female workforce participation rates. This rate in 1971 was highest in Bihar (8.9 percent) and lowest in West Bengal (4.4 percent). While in Bihar, rate (8.9 percent) was above the eastern India average of 6.9 percent, Orissa's rate of 6.8 percent and West Bengal's 4.4 percent were below it. This interstate ranking changed in 1981. While West Bengal continued to remain at the bottom with a rate of 5.8 percent the top position was taken over by Orissa (10.7 percent). Except Orissa, where there was a substantive rise in the female workforce

participation rate from 6.8 percent in 1971 to 10.7
percent in 1981, both Bihar and West Bengal had
marginal increments (from 8.9 to 9.1 percent and
from 4.4 to 5.8 percent). (Table 3, 4 & 5)

The sex composition of the workers in these three
states, remains similar to that of the eastern regi-
on as a whole, in the sense that, the share of males
in the total workforce far exceeds the share of
females in percent terms. In 1971 the figure in
Bihar, Orissa and West Bengal for males were 86.0,
89.2 and 92.5 percent respectively and for females
it was as low as 14, 10.8 and 7.8 percent respecti-
vely. Since the overall workforce participation
rate for female in Orissa rose substantially (from
6.8 to 10.7 percent), between 1971 and 1981, the
share of the female in the sex composition of work-
ers also increased from 10.8 to 16.2 percent. The
corresponding increase for Bihar and West Bengal
were 14 to 14. 8 percent/from 7.5 to 9.8 percent
respectively. The male share in 1981 in the sex
composition for the three states of Bihar, Orissa
and West Bengal were 85.2, 83.8 and 90.2 percent
respectively. (Table & 9, 10 & 11)

Spatial aspects of female work force participation

(District Level)

Exhibiting the same pattern of regional disparity observed in eastern India, there has also been wide non-uniformity in the female workforce participation rates at sub-regional (interdistrict) level in a state due to variations in the causal factors like-educational attainment, presence of SC/ST population, sociocultural leanings etc.

In Bihar there was a marked variation between the district of high participation rate (Saharsa 13.7 percent) and of low participation rate (Muzaffarpur 5.2 percent). When the districts were grouped according to their participation rate, it can be seen that number of districts in the range 10 to 15 percent had declined from seven in 1971 to five in 1981. In the range of 5 to 10 percent, the decrease was from ten districts to seven districts, whereas one can see two districts in the range of 15 to 20 percent and three districts in the range of below 5 percent. The reason for this pattern is that while some of the districts showed an increase in the female participation rate, some showed a decline which is definitely

a diversion from the general pattern. Between 1971 and 1981, in Bihar, while 'eight' districts showed an increase in female participation rate the rest 'nine' districts showed a decline. While Ranchi, Palamau, Santhal Parganas showed substantial increase, districts like Saran, Dhanbad, Muzaffarpur showed substantial decrease in this rate . (Table -13).

In case of the male female breakup of the workforce, the districts in Bihar followed the general pattern, with some exceptions. The female share in the workforce composition was 17.3, 18.5, 16.5 and 18.9 percent in Gaya, Saharsa, Bhagalpur and Singhbum, respectively in comparison to the male share of 82.7, 81.5, 83.7 and 81.1 percent. In Muzaffarpur, Dhanbad, and Darbhanga districts, female share was very low in comparison to males (8.8 to 91.2, 8.7 to 91.3 and 10.4 to 89.6 percent respectively.). In 1981 like the overall participation rate the share of the female out of 100 workers also increased but with some exception in case of some of the districts. (Table - 9)

The range between the district with high female participation rate (Ganjam 13.3 percent) and that

with low participation rate (Balasore 2.6 percent).
in Orissa showed the wide diversity of female work-
force participation among the districts of the state.
From the grouped table of districts according to
their participation rate one can see that in 1971
there were three districts (Phulbani, Mayurbhanj
and Ganjam) in the range of 10 to 15 percent FWPR,
six districts in the range of 5 to 10 percent and
four districts in the range of 5 percent or below
participation rate. (Table - 12)

Mayurbhanj, Phulbani, Koraput, Sambalpur, showed
higher participation rate of female workforce, the
reasons being that these districts have marked
tribal population along with low level of female
literacy. But the coastal districts of Puri, Bala-
sore, Cuttack and Dhenkanal showed low participation
rate, which may be associated with their low share
of the tribal population and high rate of female
literacy.   High physical proximity
along with close socioeconomic-cultural link with
Andhra Pradesh has contributed to high female employ-
ment ratio in the southern districts of Ganjam and
Koraput. Again Telugu population in these two

districts is ~substantive~ in explaining high
FWPR. (This is convincing because, Andhra Pradesh
ranks first in the list of female labour force
participation rates in the country.) Likewise
the influence of West Bengal (4.5 percent) on
Balasore district was responsible for its low
female workforce participation rate. Unlike Bihar
in 1981, every districts in Orissa showed an incre-
ase in the female workforce participation rate. The
increase was substantial in case of Mayurbhanj,
Phulbani, Koraput, Kalahandi where it almost doubled.
In 1981 from Table (42 213   ) it can be seen
that only one district (Mayurbhanj) was in 20
percent and above range, three districts were in
15 to 20 percent range, five districts were in 10
to 15 percent range, one district was in 5 to 10
percent range and three districts were below 5
percent range.

The usual pattern of low FWPR vis-a-vis high
sex composition of female workers or vice-versa
found in West Bengal and Bihar does not fit to
Orissa's case. For example Ganjam with high sex

composition of workers (11 females per 100 workers)
had the highest participation rate which indicates
the deviation from general trend. Mayurbhanj
also with high sex composition (17 females per
100 workers) has high FWPR. The phulabani (with
WPR of 15.6 percent) had a marked share in the sex
composition of workers. In 1981, the share of the
females among total workforce increased. The
districts with marked increase were Mayurbhanj
(27.1 percent), Phulbani (23.5 percent), Koraput
(22.2 percent). However, the share of women in
Ganjam more than doubled from 10.8 in 1971 to 26.5
percent in 1981 (Table-10).

There exists districtwise disparity in the
level of female workforce participation in West
Bengal .Compared to Bihar and Orissa the disparity
is highest in this state, with FWPR of 21.6 percent
for Darjeeling where in 1971, it was five times
higher than the states' average (4.4 percent).
The entire composition of the district dominated
by Gorkhas coupled by presence of large number of
tea estates offering numerous provisions for

employment of females. There are also districts
like Howrah at the other end of the scale where
the FWPR fell to 1.4 percent in 1971. Howrah,
basically a district of trade & commerce and cen-
tre of medium scale industries offers little
scope for employment of females. The FWPR in all
the districts of West Bengal in 1971 except,
Darjeeling was below 10 percent. But in 1981,
other districts (Bankura, Jalpaiguri and Puru-
liya) emerged with FWPR of more than 10 percent.
(Table - 5)

Regarding the male-female break up of workers,
the districts of the state followed the same patt-
ern as that of eastern India. In Darjeeling the
difference between the male and female workers
share was the lowest (male 72 and female 28)
in 1971. The highest difference can be found in
Cooch Bihar where the male share was 97 percent
and females share was only 3 percent in 1971.
In 1981 the share of somen among total workers
increased in every district except Darjeeling
where it showed a fall from 28 percent to 26
percent (Table-).

Female workforce participation :-
(Rural-Urban differential)

The rural-urabn differential of female work-
force participation is very much in existence in
all the three states. The general trend being
that the participation of urban females in work-
force was very low in comparison with the rural
females. In Bihar Saharsa was having the highest
FWPR of 7.22 percent in urabn area but it was very
low compared to the rural participation rate of
13.9 percent '1971). In Singhbhum, Gaya, Bhaga-
lpur, Palamau, Champaran, Patna, Santhal parganas,
Sahabad, Monghyr and Purnea the urban FWPR in 1971
and 1981 were less than half of the rural FWPRs.
The other districts were having their urban
FWPRs almost half the levels witnessed in the
rural population. (Table-3)

In Orissa the picture is different since there
were some districts which showed variation from
the general pattern of higher participation rate
for rural area and lower participation rate for
urban areas. While Ganjam, Mayurbhanj, Sambal-
pur, Koraput, Dhenkanal showed the general pattern

of low participation rate in urban area in compa-
rision to rural areas, the other eight districts
showed the reverse tendency, especially in Keon-
jhar where, in 1971, the urban FWPR some of the
districts having higher FWPR in 1971 showed
lower FWPR for urban areas than the rural area.
These districts are Phulabani, Keonjhar, Sundar-
garh, Bolangir and Kalahandi while the rest of the
group continued to show the diverse pattern in
this regard in 1981. (Table -4)

West Bengal followed the same pattern as Orissa
in case of rural urabn break up. Darjeeling, Jal-
paiguri, Puruliya, Bankura, Burdwan, Medinapore,
Hoogly, showed the general pattern of high female
workers percentage in rural areas than in urban
areas. While the rest eight districts depicted
the diversed pattern. Marked among the first
category was Darjeeling where, in 1971, the rural
FWPR was more than four fold than that of urban
FWPR (25.9 percent in comparision to 6.3 percent),
In the second category the marked one being Cooch
Bihar where the FWPR for urban area was more than
three fold of the rural area (4.6 and 1.5 percent).

In 1981, however like Orissa three districts
namely Birbhum, Malda, West Dinajpur; which
were in the diverse category, followed the
general pattern of rural-urabn differential.
Table (5).

The three economic sectors:
(Distribution of female workers)

For further explanation of the pattern of
female participation in workforce in this por-
tion of the chapter the sectoral distribution
of the female workers in each state and in
their districts will be shown. All the three
states are showing the same characteristics of
the general pattern of work force participation
in this regard. In these states the concentra-
tion is more in the primary sector in compari-
son to the other two sectors.

The primary sector's share in Bihar and Orissa
was as high as 92.4 and 76.3 percent respectively
in 1971, in West Bengal it was 69 percent. In
Bihar, in 1971, the share of secondary and terti-
ary sectors was 3.5 and 4 percent respectively,
the corresponding share in Crissa was 10 and

13.4 percent respectively and in West Bengal 9.9
and 21.1 percent respectively. Since the level
of economic development determines the distribu-
tion of workforce among the three sectors, the
sectorwise distributions of female workforce,
in eastern India indicates the degree of develo-
pment of each state. West Bengal, being the most
developed state among the three, was having some-
what less concentration was high in the remaining
two sectors. In 1981, the share of primary sector
reduced to 90 percent in Bihar and to 63.7 percent
in West Bengal. The share, however, increased in
Orissa from 76.3 percent in 1971 to 81.5 percent
in 1981. In Bihar, in 1981, both the secondary
and teriary sectors showed an increase of 1.23
and 0.91 percent respectively. In West Bengal,
while the share of secondary sector increased by
6.45 percent, that of tertiary sector declined
by 1.1 percent. In Orissa, in 1981, in comparison
to 1971, the share of both the secondary and
tertiary sectors declined by 1.44 and 3.81 percent
respectively Table (6.7 & 8).

Primary sector & total workers:

(Regional distributions)

In Bihar, in 1971, all the districts were having their female workforce concentrated in primary sector-around 90 percent, except Dhanbad district where it was 73.2 percent. In Orissa, Mayurbhaj (88.9 percent), Phulbani (83.6) percent) Koraput (83.3 percent), Ganjam (81.1 percent), Keonjhar (79.8 percent) show some what more concentration in the primary sector because of their low industrial profile and urbanisation. More industrial and urbanised districts had comparatively low concentration in the primary sector, viz Sundargarh (61.7 percent) Cuttack (67.4 percent), Puri (64.4 percent) and Sambalpur (68.8 percent). One can see a wide diversity in the proportion of female workers in primary sector in West Bengal because some of the districts are highly industrialised, urbanised and some are very less industrialised and urbanised. Hence the share of primary sector among female workers in Puruliya was 92.0 percent.

contrast, it was only 0.2 percent in Calcutta.
Some of the districts with higher proportion
of primary workers are Bankura (91 percent),
Jalpaiguri (89.6 percent), West Dinajpur
(80percent). The picture was reverse in the
case of Howrah (18 percent), Twentyfour Par-
ganan (31.6 percent), Murshidabad (40 percent)
Nadia (42.6 percent), CoochBihar (58.6percent).
The reason why Calcutta was having such a low
share of female workers in this sector is that
it is the unique district,where the degree of
urbanisation is cent percent. While in case of
Bihar and West Bengal the share of female wor-
kers in this sector in 1981 decreased from 92.4
to 90.3 and 69 to 63.7 percent respectively the
reverse holds good in case of Orissa. All the
districts in Bihar except Ranchi showed a
decline in the percentage share of primary sec-
tor. In case of West Bengal also in 1981 all the
districts except Calcutta showed a decline. But
in case of Orissa except Mayurbhanj (which showed
a decline from 88.9 to 86.8 percent) other distr-
icts showed an increase in this regard. (Table - 6,7,8)

Secondary sector & total workers:

(Regional distribution)

Share of the secondary sector in the total
female workforce participation is very low in
three states. In 1971 Bihar was having the
lowest concentration of female workers in this
sector (3.5 percent). In case of Orissa and
West Bengal it was little higher i.e. 10.4
and 9.9 percent respectively. In Bihar in 1971
seven districts were having their female worke-
rs in this sector above the state level of 3.5
percent. Dhanbad being the marked one where it
was as high as 13.6 percent. The rest ten dis-
tricts were having this below the state level.
In 1981 however in all the distrcits the rela-
tive number of female workers in this sector
increased. In increase was highest in Santhal
parganas where it increase upto 6 percent.
The lowest increase was in Dhanbad (0.2 percent)
Table (6).

In Orissa however one will see a marked
diversity. While seven districts were above the

state level of 10.4 percent, six districts were
below it. Sambalpur (20.4 percent), Bolangir
(17percent) and Dhenkanal (14.7 percent) showed
a substantial proportion of female workers in
this sector, while The less developed ones
like Koraput (4 percent), Ganjam (6.2 percent)
Mayurbhanj (6.9 percent), Keonjhar (7.1 percent)
and Phulbani (7.4 percent) showed a less propor-
tion of female workers in this sector. In 1981
in case of eleven districts the share of this
sector decreased, while in case of two districts
it increased. Marked decline observed in Bolan-
gir (5.7 percent) and Dhenkanal (4.8 percent).
The increase was in Sundargarh (1 percent) and
Mayurbhanj (2.5 percent) (Table -7).

In West Bengal the concentration of female
workers in secondary sector showed the maximum
disparity since the highest concentration was in
Murshidabad (42.6 percent) and the lowest in
Jalpaiguri (2.1 percent). While seven districts
were having their share in this sector above
the state level, the other 'nine' districts were
below it. The share of this sector in Murshidabad,
Howrah, Twentyfour pargans, Nadia, Cooch Bihar

all being highly industrialised districts were
as high as 42.6, 25.8, 22.0, 19.3 and 17.1
percent respectively. It is low on 2.1, 2.7,
4.2, 5 percent in Jalpaiguri, Darjeeling,
Bankura, and Puruliya respectively.

In 1981 in West Bengal the share of this sec-
tor had a spectacular rise from 9.9 to 16.3
percent. Even in five districts the share of this
sector was markedly higher than that of the pri-
mary sector, which is a sign of development. But
however, in some of theless developed districts
the share though increased still remained very
low that too below the state level. The degree
of disparity that existed in 1971 further wide-
ned when the state average increased in 1981.
The increase was marked in case of economically
developed Murshidabad, Howrah, Calcutta, Nadia,
Malda, CoochBihar where it was as high as 25.3
7.6, 1.2, 19, 17.3 and 8.8 percent respectively
(Table 8).

The tertiary sector & total workers:

(Regional Distribution)
In tertiary sector the female work partici-

was low in these states. Out of total female work-
force in 1971 the share of this sector for Bihar,
Orissa and West Bengal were 4.1, 13.4 and 21.1 per-
cent respectively. In all the three states its share
was more than that of secondary sector. Eight dis-
tricts in Bihar had female workers in this sector
over the state level. The more economically developed
and urbanised district like Dhanbad (13.2 percent),
Patna (7.3 percent) Ranchi (7.2 percent), Singhbhum
(6.0 percent) and Muzaffarpur (6.0 percent) were
having a higher proportion of female workers concen-
trated in this sector in comparison to other districts.
In 1981 all the districts except Purnea (-0.1 percent)
Gaya (0-0.1 percent) and Ranchi (-1.0 percent) showed
an increase in the tertiary sector's share (Table - 6)

In Orissa six districts Sundargarh (24.7 per-
cent) Puri (21.6 percent), Kalahandi (20.9 percent),
Cuttack (19.2 percent), Bolangir (15.4 percent) and
Balasore (14 percent) showed the share of this
sector above the state level (13.4 percent). All
of the above, except Kalahandi, are more developed
and urbanised than other seven districts which showed
a lower concentration of their female workers in

this sector. Among the districts showing a marked decline in this sector were Kalahandi (13.7 percent) and Sundargarh (8.46 percent). Only three districts showed an increase (Puri, Cuttack and Balasore) (Table -7).

In 1971 the share of tertiary sector in the total workforce for female was comparatively higher in West Bengal (21.1 percent) than the other two states. The more developed and urbanised districts like Calcutta (89.3 percent), Howrah (56.3 percent), Twenty four Parganas (46.4 percent), Nadia (38.2 percent) had a higher share for this sector which were even higher than their corresponding figures in primary sector in 1971. While the underdeveloped Jalpaiguri (8.3 percent), Puruliya (3.1 percent) Bankura (5.3 percent) and Midnapore (9.2 percent) were having very low concentration of workers in this sector. (Table - 8)

The share of this sector in West Bengal declined, though marginally, from 21.1 in 1971 to 20.0 percent in 1981. While nine districts showed decline, there was increase in case of other seven districts. The maximum decrease and increase

was in case of Malda (-6.2 percent) and Twenty
four Paraganas (+5.2 percent) and minimum decline
and increasement can be seen in Birbhum (-1.0 per-
cent) and Howrah (+0.2 percent) (Table - 8).

Urban Female workforce and sectoral break-up:

The general pattern of the distribution of
female workers in the three sectors is that, in
urban area unlike the rural one, the concentration
of female workers is very low in primary sector in
comparison to the other two sectors. In Bihar in
1971 out of every 100 female workers in urban areas
42, 15 and 43 were in primary, secondary and tertiary
sector respectively. But in 1981 the corresponding
figures were 35, 15 and 50. In case of Orissa the
picture is almost the same, and in 1971 distribution
of female workers in primary, secondary and tertiary
sector were 24, 14 and 62 respectively. The corres-
ponding figures in 1981 were 29, 18 and 53. Because
of the rise in total participation rate, there was
an increase in the share of primary sector than the
other sectors in Orissa from 1971 to 1981.

Since West Bengal is the most developed state among the three, the pattern of distribution of female workers in the three sectors also differs, in the sense that, here share of primary sector in urban area was very low both in 1971 and 1981. In West Bengal in 1971 the percentage of female workers in primary, secondary and tertiary sectors were 5.7, 19.2 and 75.1 respectively. The corresponding figures in 1981 were 6, 23.4 and 70.6 percent respectively. From this, one can see an increase in the share of the primary and secondary sector consequent upon a decline in tertiary sector.
(Table - 8.428

Sectoral shift in the female workforce:

Every country in the path of its economic growth experiences a shift in a sectoral pattern of the workforce. The shift is from primary to secondary and tertiary sectors. In the other words it is the shift from agricultural activities to manufacturing and services activities which brings about growth to the economy. All the developed countries during their economic growth

experienced this shift of the labour force.
In the developed countries, the growth of the
industries was accompanied by the development
of tertiary activities on the one hand and
relative decline of other primary activities
on the other. Rise in the non-agricultural
activities leads to increase in income, which is
just the reverse in case of primary activities
as productivity in secondary and teritiary sectors
are very high in comparison to primary sector.
Again with the development of productive force
the shift of the workforce from primary to
secondary and teritiary activities further accen-
tuated. Continuous development of productive
force creates conditions for increasingly complex
division of labour. With the introduction of
division of labour in production, labour producti-
vity rises and the transfer takes place. This
is due to two reasons. Firstly because of
division of labour all people need
not produce food for themselves. Secondly
because the demand for food articles are

relatively inelastic, as productivity rises due to division of labour, it can be met by the production by lesser number of people.

Per capita income also determines the distribution of labour force in three sectors. When the per capita income is low in one country, the demand for primary goods is very high, so the major part of the workforce will be in the primary sector. But with economic growth, when the per capita income will increase the demand for manufacturing products will rise, which makes place for an increase in the production of manufacturing goods. With this, process of industrialisation begins and there will be a gradual shift of the workforce from the primary to secondary and teritiary sectors.

In case of eastern India, one can also see a sectoral shift of the female workforce. While in 1971 the proportion of female workers in primary sector was 84.2 percent, it declined to 81.5 percent in 1981. In case of secondary (6.2 to 8.6 percent) and teritiary sectors (9.0 to 9.9 percent) it increased over the decade. In this study

in order to get a clear picture of the sectoral
shift of the female workers, we are dividing the
46 districts in 1971 and 1981 (Bihar's districts
were adjusted according to 1971) of eastern India
into two categories of "developing" and "declining"
districts. Developing districts are those in which
the share of primary sector in the total workforce
declined from 1971 to 1981. Declining districts
are defined as districts where share of primary
sector in share increased. From appendix it can
be observed that in eastern India there were 31
districts in the first category and 15 districts in
the second. In order to explain it further we have
grouped these districts in appendix-2 according to
the degree of decrease or increase in primary
sector. From this table one can see that 'four'
districts of the first category show a decrease
of the share of primary sector below 1 percent
point, 'twenty one' districts showed a decrease
from 1 to 5 percentage point and 'seven' dist-
ricts showed a decline of 5 percentage point and
above . In the second category the corresponding

figures for the three groups are four, four and six districts.

These two major category districts are further divided into six categories where we are taking the other two sectors into consideration (appendix -3).

i) Decrease in primary and teritiary sectors and increase in secondary sector (P↓ S↑ T↓): There were eleven districts in this category where the share of the primary and teritiary sectors are showing a decline where as/an there is increase in the secondary sector. Out of these eleven/ two in districts, Nadia and Murshidabad , the decline in primary sector was above 5 percent point. There were seven districts where the primary sectors' share declined were below 5 percentage point but above 1 percent and in Purnia and Gaya the share declined by less than 1 percentage point.

ii) (P↓ S↑ T↑)

This group includes twenty one districts of this region where the share of the primary sector declined but those of the secondary and teritiary

sector increased. In this group in three districts, namely ,Howrah, Twenty four Parganas and Santhal Parganas the decrease in primary sector's share was more than 5 percentage point. Again there were two districts (Saharsa and Monghyr) ? where the decline is below 1 percentage point and in the rest of the districts the decline was between 1 to 5 percentage point.

iii)   (P↓ S↓ T↑)

In this category of primary sector and secondary sector decline and teritiary sector increase there was not a single district in this region.

iv)   (P↑ S↑ T↓)

This group comprises four districts of the eastern India where the share of primary and secondary sector increased but that of teritiary sector declined. Out of these four, Calcutta (due to increased fishing activities) and Ranchi show an increase in primary sector below 1 percentage point. The other two Koraput and Sundargarh

sector increased. In this group three districts,
namely ,Howrah, Twenty four Parganas and Santhal
Parganas   the decrease in primary sector's
share was more than 5 percentage point. Again
there were two districts (Saharsa and Monghyr)
where the decline is below 1 percentage point and
in the rest of the districts the decline was bet-
ween 1 to 5 percentage point.

iii)   (P↓ S↓ T↑)

In this category of primary sector and secondary
sector decline and teritiary sector increase
there was not a single district in this region.

iv)   (P↑ S↑ T↓)

This group comprises four districts of the eastern
India where the share of primary and secondary
sector increased but that of teritiary sector
declined. .Out of these four, Calcutta (due to
increased fishing activities) and Ranchi show
an increase in primary sector below 1 percentage
point. The other two Koraput and Sundargarh

experienced an increase of 1 to 5 percent and 5 percent and above respectively.

v)   (P↑ S↓ T↑)

In this category there were three districts. Out of these three, two;Cuttack and Puri had an increase in primary sector's share below 1 percentage point while Balasore had an increase between 1 to 5 percentage point.

vi)   (P↑ S↓ T↓)

This category comprises of seven districts. The districts belonging to this category are characterised by an increase in primary sector but a decrease in secondary and teritiary sector. Out of the seven, two districts Phulabani and Dhenkanal showed an increase between 1 to 5 percentage point in the primary sector. The other five Ganjam, Keonjhar, Kalahandi, Bolanagir and Sambalpur showed an increase of more than 5 percentage point of the primary sector's share.

WEST BENGAL- BIHAR- ORISSA

NEPAL

UTTAR PRADESH

BIHAR

BANGLA DESH

WEST BENGAL

MADHYA PRADESH

ORISSA

BAY OF BENGAL

BAY OF BENGAL

100   50   0   50   100

Kms.
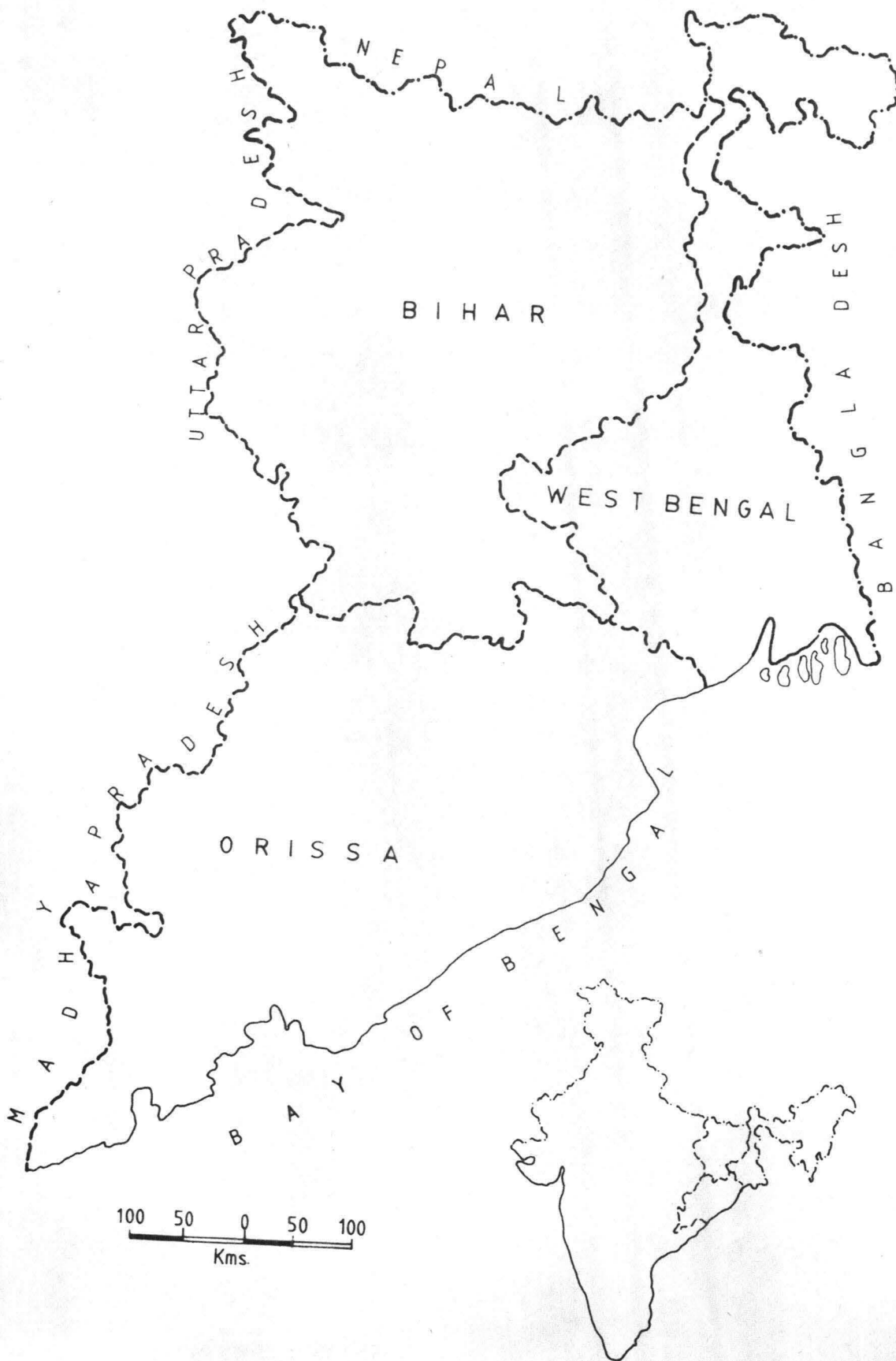
BIHAR
FEMALE WORKFORCE PARTICIPATION
RATES:1971&1981
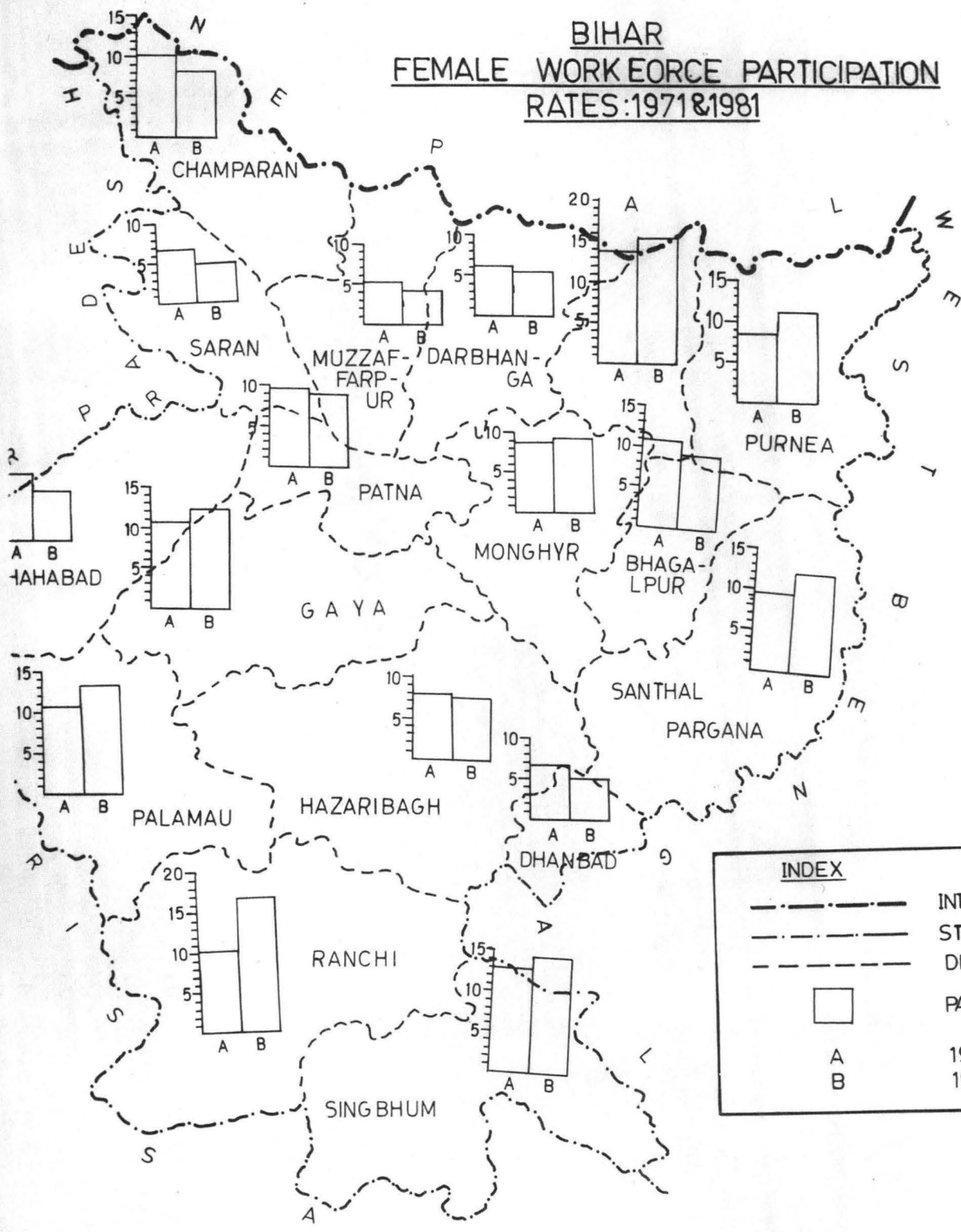
ORISSA
FEMALE WORKFORCE PARTICIPATION
RATES: 1971 & 1981

INDEX

COAST LINE
STATE BOUNDARY
DISTRICT   "
A   1971
B   1981

PARTICIPATION RATE
(in percentage)

0   20   40   60 Kms
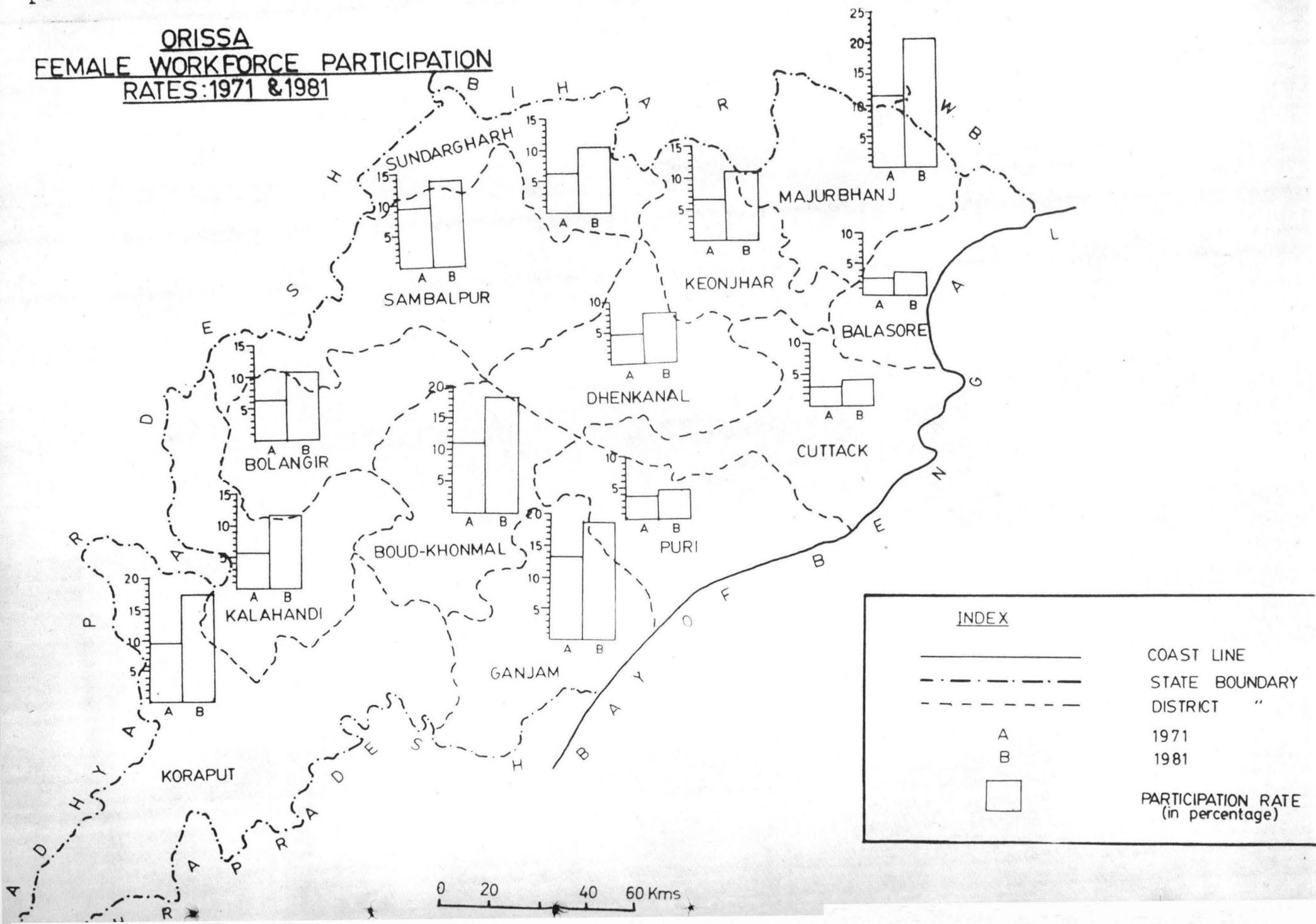
WEST BENGAL

FEMALE WORK FORCE PARTICIPATION RATES: 1971 & 1981
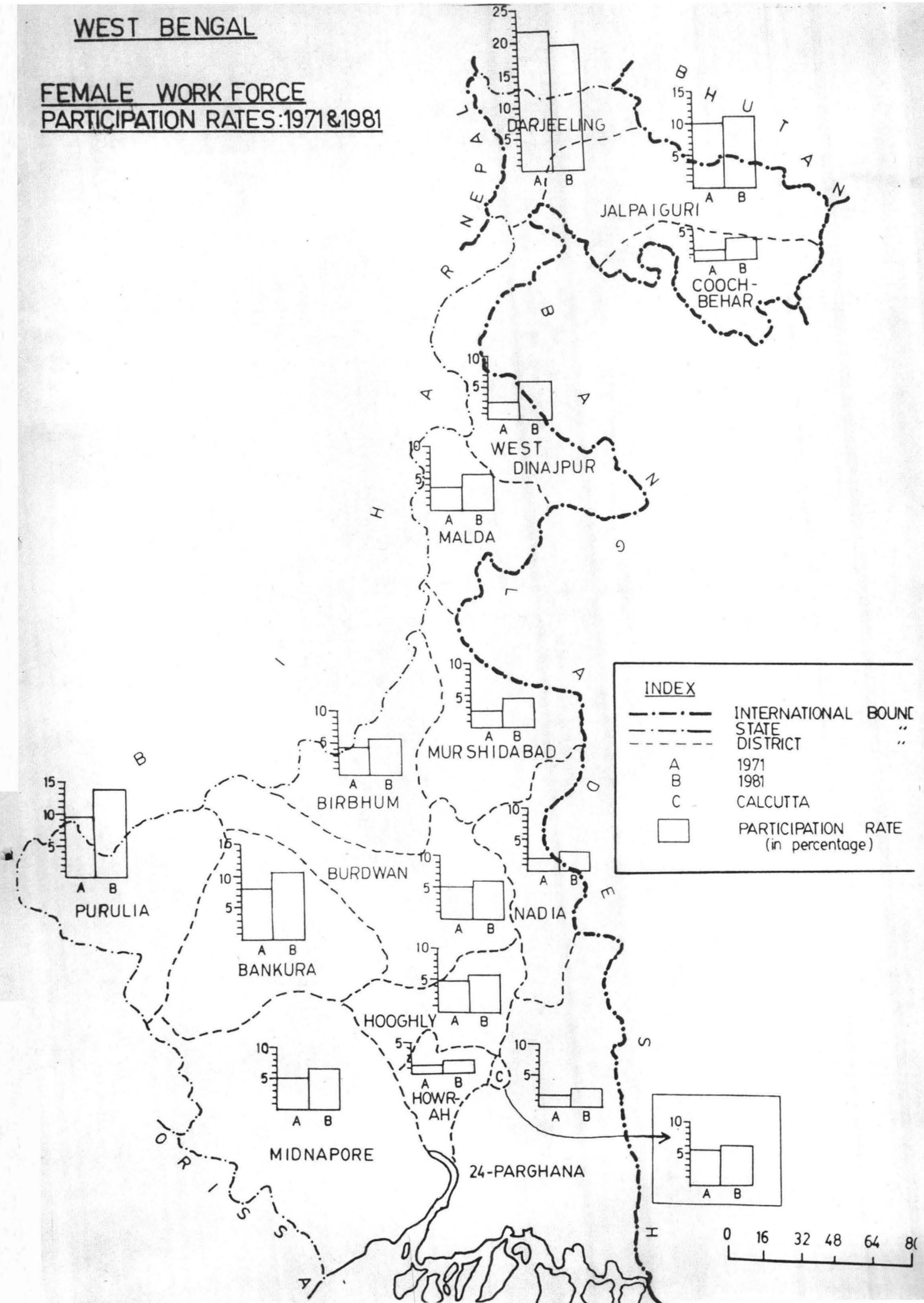
INDEX

—··—··—	INTERNATIONAL BOUND
—·—·—	STATE	"
-------	DISTRICT	"
A	1971
B	1981
C	CALCUTTA
▭	PARTICIPATION RATE (in percentage)

DARJEELING

BHUTAN

JALPAIGURI

COOCH-BEHAR

WEST DINAJPUR

MALDA

MURSHIDABAD

BIRBHUM

PURULIA

BURDWAN

BANKURA

NADIA

HOOGHLY

MIDNAPORE

HOWR-AH

24-PARGHANA

ORISSA

0   16   32   48   64   8(
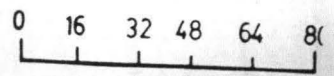
SECTORWISE DISTRIBUTION OF FEMALE WORKERS
(WEST BENGAL   BIHAR AND ORISSA)
1971 And   1981

West Bengal
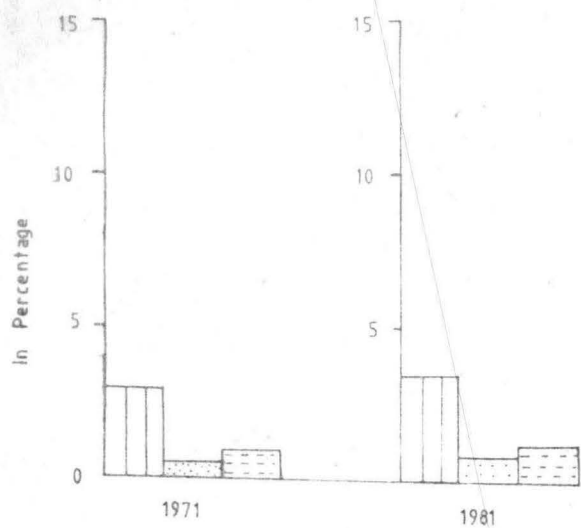
Bihar

Orissa
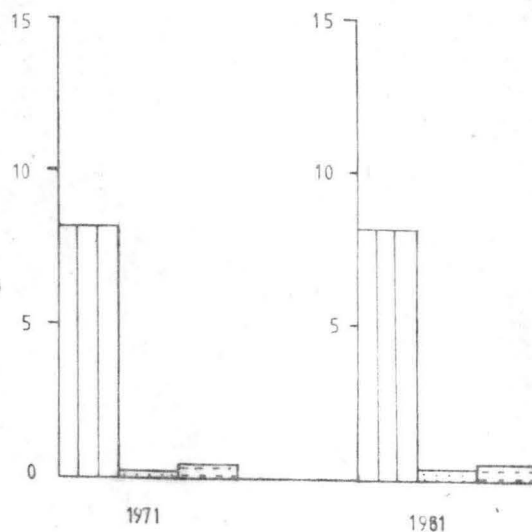
Index
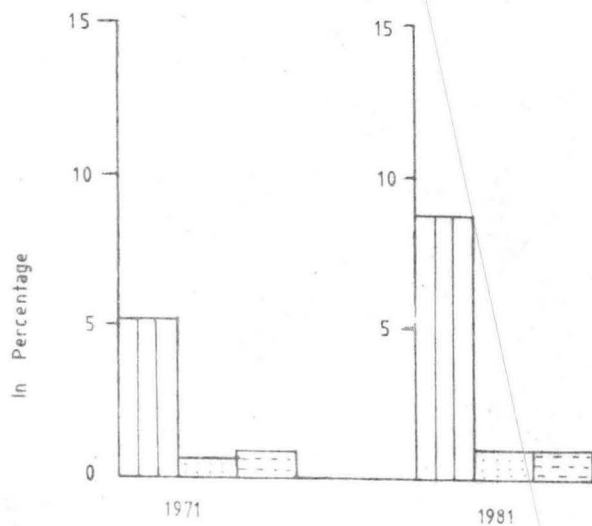
(vertical lines)	Primary Workers
(dotted)	Secondary Workers
(dashed)	Tertiary Workers

Table - 3

Bihar: Districtwise Work Force Participation Rate: Male and Female(1971-81)

		Total						Rural				Urban			
		Persons		Males		Females		Males		Females		Males		Females	
		1971	1981	1971	1981	1971	1981	1971	1981	1971	1981	1971	1981	1971	1981
1.	Patna	30.35	28.5	48.92	46.09	9.35	9.02	49.81	47.39	11.31	10.71	45.81	43.04	4.51	4.62
2.	Gaya	30.69	30.15	50.02	47.53	10.3	12.21	50.56	48.08	11.31	12.97	43.75	42.23	4.24	4.18
3.	Sahababad	29.3	26.52	48.69	45.34	8.82	6.2	49.0	45.76	9.26	6.59	45.48	41.85	3.58	2.63
4.	Saran	26.62	23.92	47.95	43.52	6.68	4.93	47.55	43.58	6.76	5.07	46.3	42.72	4.5	2.66
5.	Champaran	33.89	31.44	55.99	52.52	10.14	8.51	56.37	52.99	10.52	8.78	49.55	45.25	4.6	3.83
6.	Muzaffarpur	29.44	27.59	53.41	50.11	5.19	4.17	53.79	50.63	5.26	4.24	47.1	43.97	3.71	3.17
7.	Darbhanga	29.71	27.77	52.78	49.59	6.23	5.45	53.21	50.04	6.35	5.56	44.11	41.84	3.48	5.53
8.	Monghyr	30.82	29.36	51.4	48.18	8.8	9.1	52.52	49.12	9.51	9.84	43.41	42.06	3.31	3.91
9.	Bhagalpur	32.02	29.64	51.3	48.29	10.92	9.16	52.15	49.15	11.75	9.87	44.48	42.02	3.5	3.59
10.	Saharsa	35.31	34.42	55.22	52.42	13.65	15.06	55.44	52.85	13.93	15.53	50.96	45.82	7.22	6.86
11.	Purnea	33.23	33.85	55.92	54.84	8.5	11.19	56.27	55.5	8.82	11.77	51.17	48.13	3.33	4.4
12.	Santhal-Parganas	32.7	33.03	54.9	53.12	9.53	12.04	55.55	53.92	9.88	12.62	45.01	42.94	3.37	3.69
13.	Palamau	32.18	32.35	52.75	50.46	10.84	13.42	53.17	50.93	11.1	13.93	44.72	43.09	4.98	4.11
14.	Hazaribagh	29.71	28.13	21.02	47.9	7.95	7.69	51.5	48.35	8.37	8.27	48.12	45.57	4.77	3.87
15.	Ranchi	31.83	34.51	52.9	51.67	10.19	16.7	54.40	54.13	10.92	19.34	44.29	43.12	5.04	6.46
16.	Dhanbad	33.73	28.17	55.19	47.03	6.62	5.00	53.89	46.98	6.79	5.35	56.68	47.07	6.37	3.98
17.	Singhbhum	33.19	32.71	52.3	49.94	12.92	14.34	54.06	53.64	15.25	18.57	47.85	42.66	5.56	4.89
	BIHAR	31.03	29.68	52.16	49.19	8.88	9.06	52.73	50.01	9.05	9.7	49.48	43.834	4.54	4.17
	EASTERN INDIA	29.94	29.7	51.38	49.91	6.93	8.99	51.93	50.53	7.33	8.84	49.18	47.17	4.39	4.86

Source : Census of India, 1971, Series 4, Economic Tables
Census of India, 1981, Series 4, Economic Tables

Table : 4

Orissa : Districtwise Work Force Participation Rate: Male and Female(1971-81)

		Total						Rural				Urban			
		Persons		Males		Females		Males		Females		Males		Females	
		1971	1981	1971	1981	1971	1981	1971	1981	1971	1981	1971	1981	1971	1981
1.	Sambalpur	33.53	36.39	60.51	57.9	9.56	14.27	61.68	59.39	9.92	15.18	52.57	50.26	6.64	8.97
2.	Sundargarh	31.45	32.41	55.21	53.08	6.22	10.22	55.29	55.13	5.93	11.71	53.37	48.83	7.26	6.49
3.	Keonjhar	30.6	32.41	54.14	53.25	6.51	11.2	54.25	53.76	6.1	11.3	52.79	49.51	12.3	10.34
4.	Mayurbhanj	33.35	38.26	54.8	55.51	11.6	20.21	5.09	56.03	11.76	21.44	45.52	47.56	5.46	9.66
5.	Balasore	26.98	27.2	50.67	50.1	2.6	3.78	50.83	50.3	2.46	3.64	48.09	47.95	5.17	5.4
6.	Cuttack	27.49	27.65	51.53	50.65	3.11	4.00	51.51	50.6	3.03	3.87	51.7	51.02	4.17	5.29
7.	Dhenkanal	30.08	31.53	54.94	53.98	4.65	8.09	55.25	54.07	4.7	8.17	48.3	53.05	3.36	7.00
8.	Boud-Khondmal	35.29	38.88	59.68	59.45	11.0	18.29	59.93	60.1	10.98	18.76	52.45	48.51	11.74	9.17
9.	Bolangir	33.59	34.898	60.79	58.87	6.21	10.73	61.65	59.92	6.2	11.02	49.53	48.8	6.27	7.74
10.	Kalahandi	32.73	35.94	60.16	60.29	5.59	11.85	60.62	60.97	5.49	12.06	51.41	50.13	7.7	8.41
11.	Koraput	35.09	38.85	60.21	60.2	9.46	17.35	60.96	61.28	9.69	18.18	52.05	52.03	6.89	10.55
12.	Ganjam	32.54	34.75	52.61	51.88	13.29	18.68	53.5	52.96	13.85	19.51	46.0	45.72	8.71	9.41
13.	Puri	29.08	29.14	53.99	52.74	3.59	4.56	54.43	53.5	3.44	4.32	50.3	48.75	5.09	6.09
	ORISSA	31.00	32.75	55.32	54.38	56.81	(10.70)	55.79	51.1	6.83	11.07	50.63	49.38	6.56	7.65
	EASTERN INDIA	29.94	29.7	51.48	49.91	6.93	8.99	51.93	50.53	7.33	8.84	49.18	47.17	4.39	4.86

Source :- Census of India, 1971, Series 16, Economic Tables.
Census of India, 1981, Series 16 Economic Tables (Unpublished).

Table : 5

West Bengal : Distrcitwise Work Force Participation Rate: Male and Female(1971-81)

		Total						Rural				Urban			
		Persons		Males		Females		Males		Females		Males		Females	
		1971	1981	1971	1981	1971	1981	1971	1981	1971	1981	1971	1981	1971	1981
1.	Darjeeling	36.13	35.01	48.93	48.66	21.61	19.64	47.89	48.47	6.26	6.8	49.26	48.73	25.88	24.28
2.	Japaiguri	31.12	31.75	49.81	50.53	10.00	11.1	47.66	47.91	4.04	4.58	50.04	50.97	10.66	12.15
3.	Coochbihar	27.61	28.98	51.37	52.96	1.69	3.36	45.87	44.5	4.62	6.95	51.79	53.59	1.49	3.1
4.	West Dinajpur	27.98	29.86	51.21	52.6	2.77	5.58	41.43	43.71	2.9	4.67	52.26	53.75	2.74	5.69
5.	Malda	27.1	27.27	49.54	47.65	3.55	5.81	43.31	42.89	4.22	5.13	49.83	47.89	3.38	5.84
6.	Murshidabad	25.91	27.09	48.14	48.81	2.64	4.45	43.68	44.08	5.04	9.25	48.56	49.29	2.42	3.95
7.	Nadia	24.78	26.71	46.39	48.34	1.97	3.23	42.65	45.89	3.71	5.95	47.26	49.77	1.57	2.48
8.	Twenty four Parganas	25.37	26.153	47.1	47.261	1.83	2.79	45.92	46.60	3.03	3.98	47.75	47.7	1.26	2.07
9.	Howarah	26.56	26.2	47.58	47.36	1.36	1.98	50.99	50.3	2.13	2.61	44.77	44.72	0.89	1.51
10.	Calcutta	37.02	34.87	56.96	55.31	5.66	6.17	-	-	-	-	56.96	55.31	5.66	6.17
11.	Hoogly	27.0	28.63	46.9	49-07	4.77	6.13	49.43	48.01	3.64	3.76	45.9	49.54	5.15	7.06
12.	Burdwan	27.93	27.91	48.15	47.91	5.12	6.24	47.15	44.8	3.21	3.52	48.47	49.29	5.63	5.29
13.	Birbhum	26.65	28.114	48.18	49.83	4.4	5.54	45.12	45.15	4.66	5.08	48.42	50.27	4.38	5.58
14.	Bamkura	28.31	29.14	47.89	46.93	7.39	10.7	43.63	45.04	3.8	5.36	48.24	47.09	8.2	11.09
15.	Midnapore	26.7	26.77	47.18	46.02	5.00	6.53	43.29	43.61	3.53	4.21	47.52	46.24	5.15	6.73
16.	Purulia	31.1	31.1	52.02	47.71	9.39	13.76	44.57	44.11	4.3	3.85	52.71	48.07	9.83	14.71
-	WEST BENGAL	27.91	28.26	48.83	48.71	4.43	5.81	49.8	48.7	3.92	4.66	46.48	48.72	4.58	6.19
-	EASTERN INDIA	29.94	29.7	51.48	49.91	6.93	8.99	51.93	50.53	7.33	8.84	49.18	47.17	4.39	4.86

Source: Census of India, 1971, Series 22, Economic Tables
Census of India, 1981, Series 22, Economic Tables (Unpublished)

Table - 6

Bihar : Distribution of Female Workers in Primary, Secondary & Tertiary Sector(1971-81)

		Primary		Secondary		Tertiary		Sectoral Shift (1971-81)			
		1971	1981	1971	1981	1971	1981	Primary	Secondary	Tertiary	
1.	Patna	89.19	85.87	3.54	4.86	7.27	9.28	-3.32	+1.32	+2.02	P↓ S↑ T↑
2.	Gaya	94.30	94.23	2.76	2.97	2.94	2.8	-0.07	+0.21	-0.14	P↓ S↑ T↓
3.	Sahabad	92.15	90.09	3.61	4.34	4.24	5.57	-2.06	+0.73	+1.33	P↓ S↑ T↑
4.	Saran	93.70	90.43	3.07	4.75	3.23	4.82	-3.27	+1.68	+1.59	P↓ S↑ T↑
5.	Champaran	96.05	94.84	1.65	2.33	2.30	2.83	-1.21	+0.68	+0.53	P↓ S↑ T↑
6.	Muzaffarpur	91.50	87.03	2.48	3.92	6.02	9.04	-4.47	+1.44	+3.03	P↓ S↑ T↓
7.	Darbhanga	93.07	89.32	2.83	4.59	4.1	6.09	-3.75	+1.76	+1.99	P↓ S↑ T↑
8.	Munghyr	90.31	89.38	5.77	5.84	3.92	4.77	-0.93	+0.07	+0.86	P↓ S↓ T↑
9.	Bhagalpur	93.67	90.16	3.00	5.57	3.33	4.27	-3.5	+2.57	+0.94	P↓ S↑ T↑
10.	Saharsa	97.74	97.31	1.13	1.24	1.13	1.45	-0.43	+0.11	+0.32	P↓ S↑ T↑
11.	Purnia	94.73	94.51	2.75	3.08	3.12	2.41	-0.22	+0.33	-0.11	P↓ S↑ T↓
12.	Santhal Praganas	92.22	85.68	4.73	10.73	3.05	3.59	-6.54	+6.00	+0.54	P↓ S↑ T↓
13	Palamu	96.17	94.41	1.76	3.11	2.07	2.48	-1.76	+1.35	+0.41	P↓ S↑ T↑
14.	Hazaribag	93.04	89.97	3.20	4.92	3.76	5.12	-3.07	+1.72	+1.35	P↓ S↑ T↑
15.	Ranchi	88.68	89.29	4.10	4.44	7.22	6.27	+0.67	+0.34	-0.95	P↑ S↑ T↓
16.	Dhanbad	73.21	65.06	13.59	13.75	13.20	21.19	-8.15	+0.16	+7.99	P↓ S↑ T↑
17.	Singhbhum	87.47	84.12	6.49	7.69	6.04	8.27	-3.35	+1.12	+2.23	P↓ S↑ T↑
	BIHAR	92.39	90.25	3.52	4.75	4.09	5.00	-2.14	+1.23	+0.91	P↓ S↑ T↑
	EASTERN INDIA	84.22	81.51	6.18	8.63	9.6	9.86				

Source : Census of India, 1971, Series 4, Economic Tables.
Census of India, 1981, Series 4, Economic Tables.

Orissa - Distribution of Female Workers in Primary, Secondary & Tertiary Sector(1971-81)

| | | Primary | | Secondary | | Tertiary | | Sectoral Shift (1971-81) | | | |
		1971	1981	1971	1981	1971	1981	Primary	Secondary	Tertiary	
1.	Sambalpur	68.83	76.33	20.38	16.30	10.79	7.37	+7.5	-4.08	-3.42	P↑ S↓ T↓
2.	Sundargarh	61.71	69.14	13.60	14.63	24.69	16.23	+7.43	+1.03	-8.46	P↑ S↑ T↓
3.	Keonjhar	79.83	85.29	7.10	6.37	13.07	8.34	+5.46	-0.73	-4.73	P↑ S↓ T↓
4.	Mayurbhanj	88.90	86.84	6.92	9.44	4.18	3.72	-2.06	+2.52	-0.46	P↓ S↑ T↓
5.	Balasore	75.72	77.68	10.32	7.66	13.96	11.66	+1.96	-2.66	+0.7	P↑ S↓ T↑
6.	Cuttack	67.40	68.21	13.45	12.12	19.15	19.67	+0.81	-1.8	+0.52	P↑ S↓ T↑
7.	Dhenkanal	74.14	79.02	14.66	9.91	11.20	11.07	+4.88	-4.75	-0.13	P↑ S↓ T↓
8.	Boud-Khondmal	83.59	88.12	7.38	5.96	9.03	5.92	+4.33	-1.42	-3.11	P↑ S↓ T↓
9.	Bolangir	67.53	79.19	17.03	11.29	15.44	9.52	+11.66	-5.74	-5.92	P↑ S↓ T↓
10.	Kalahandi	67.48	84.27	11.66	8.61	20.86	7.12	+16.79	-3.05	-13.74	P↑ S↓ T↓
11.	Koraput	83.32	87.62	3.99	4.25	12.69	8.13	+4.3	+0.26	- 4.56	P↑ S↑ T↓
12.	Ganjam	81.14	87.35	6.19	4.87	12.67	7.78	+6.21	-1.32	- 4.89	P↑ S↓ T↓
13.	Puri	64.41	64.66	13.92	11.98	21.58	23.36	+0.25	-1.94	+1.78	P↑ S↓ T↑
	ORISSA	76.29	81.54	10.35	8.91	13.36	9.55	+5.28	-1.44	-3.81	P↑ S↓ T↓
	EASTERN INDIA	84.22	81.51	6.18	8.63	9.6	9.86				

Source : Census of India, 1971, Series 16, Economic Tables.
Census of India, 1981, Series 16, Economic Tables (unpublished).

-Contd.-

Table : 8

West Bengal – Distribution of Female Workers in Primary, Secondary & Tertiary Sector(1971-81)

| | | Primary | | Secondary | | Tertiary | | Sectoral Shift (1971-81) | | | | | |
| | | | | | | | | Primary | Secondary | Tertiary | | | |
		1971	1981	1971	1981	1971	1981						
1.	Darjeeling	87.39	84.47	2.74	4.88	9.87	10.65	-2.92	+2.14	+0.78	P ↓	S ↑	T ↑
2.	Jalpaiguri	89.6	88.03	2.1	3.47	8.3	8.70	-1.57	+1.17	+0.4	P ↓	S ↑	T T ↑
3.	Cooch Bihar	58.61	53.62	17.02	25.82	24.37	20.56	-4.99	+8.8	-3.81 ·	P ↓	S ↑	T ↓
4.	West Dinajpur	80.01	76.34	7.73	13.27	12.26	10.39	-3.67	+5.54	-1.87	P ↓	S ↑	T ↓
5.	Malda	69.17	58.16	14.13	31.39	16.70	10.45	-11.01	+17.26	-6.25	P ↓	S ↑	T ↓
6.	Murshidabad	40.00	19.76	42.57	67.91	17.43	12.33	-20.24	+25.34	-5.1	P ↓	S ↑	T ↓
7.	Nadia	42.55	28.69	19.28	38.26	38.17	33.05	-13.86	+18.98	-5.12	P ↓	S ↑ ·	T ↓
8.	Twenty-four-Parganas	31.59	23.24	21.98	25.12	46.43	51.64	- 8.35	+ 3.14	+5.21	P ↓	S ↑	T ↑
9.	Howrah	17.96	10.17	25.78	33.39	56.26	56.44	-7.79	+7.61	+ 0.18	P ↓	S ↑	T ↑
10.	Calcutta	0.23	1.06	10.45	11.60	89.32	87.34	+0.83	+1.15	- 1.98	P ↑	S ↑	T ↓
11.	Hoogly	73.16	70.48	8.16	11.73	18.68	17.79	-2.68	+3.57	- 0.89	P ↓	S ↑	T ↓
12.	Bardhaman	78.40	76.01	6.98	11.08	14.62	12.91	-2.39	+4.1	-1.71	P ↓	S ↑	T ↓
13.	Birbhum	78.61	76.79	7.96	10.80	13.42	12.41	-1.82	+2.84	-1.22	P ↓	S ↑	T ↓
14.	Bankura	90.96	86.02	4.20	8.68	4.84	5.30	-4.94	+4.48	+0.46	P ↓	S ↑	T ↑
15.	Medinapore	83.53	79.56	7.51	11.20	8.96	9.24	-3.97	+3.69	+0.28	P ↓	S ↑	T ↑
16.	Puruliya	92.00	89.59	4.99	6.35	3.01	4.06	-2.41	+1.36	+1.05	P ↓	S ↑	T ↑
	WEST BENGAL	69.03	63.67	9.86	16.31	21.11	20.02	-5.36	+6.45	-1.09	P ↓	S ↑	T ↓
	EASTERN INDIA	84.22	81.51	6.18	8.63	9.6	9.86						

Source : Census of India, 1971, Series – 22, Economic Tables.
Census of India, 1981, Series – 22, Economic Tables (unpublished)

TABLE - 09 (Contd) SEX COMPOSITION OF WORKERS (MALE & FEMALES) OUT OF 100 WORKERS , BIHAR 1971-81.

State/District	1971		1981	
	% Male worker	% Female worker	% Male worker	% Female worker
BIHAR	86.04	13.96	85.17	14.83
PATNA	84.58	15.42	84.99	15.01
GAYA	82.67	17.33	80.07	19.93
SAHABAD	85.36	14.64	88.75	11.25
SARAN	87.15	12.85	89.52	10.48
CHAMPARAN	85.58	14.42	87.04	12.96
MUZAFFARPUR	91.23	8.77	92.58	7.42
DARBHANGA	89.60	10.40	90.30	9.70
MONGHYR	86.21	13.79	85.08	14.92
BHAGALPUR	83.72	16.28	85.26	14.74
SAHARSA	81.49	18.51	78.90	21.10
PURNEA	87.76	12.24	84.11	15.89
SANTHALPRAGA	85.73	14.27	82.17	17.83
PALAMAU	83.48	16.52	79.71	20.29
HAZARIBAGH	86.76	13.24	86.56	13.44
RANCHI	84.22	15.78	76.25	23.75
DHANBAD	91.33	8.67	92.03	7.97
SINGHBHUM	81.12	18.88	78.60	21.40

Source : Census of India , 1971 , Series 4 , B- I , Part- A & B
Census of India , 1981 , Series 4 , B-3

TABLE-10 : SEX COMPOSITION OF WORKERS (MALES AND FEMALES)
OUT OF 100 WORKERS - 1971-81

State Districts	1971		1981	
	% Male worker	% Female worker	% Male worker	% Female worker
EASTERN INDIA	88.81	11.19	86.64	13.36
ORISSA	89.16	10.84	83.82	16.18
SAMBALPUR	86.64	13.36	80.67	19.33
SUNDARGARH	90.41	9.59	84.79	15.21
KEONJHAR	89.49	10.51	82.87	17.13
MAYURBHANJ	82.73	17.27	72.95	27.05
BALASORE	95.25	4.75	93.14	6.86
CUTTACK	94.38	5.62	92.86	7.14
DHENKANAL	92.36	7.64	87.45	12.55
PHULBANI	84.39	15.61	76.50	23.50
BOLANGIR	90.79	9.21	84.68	15.32
KALAHANDI	91.42	8.58	83.44	16.56
KORAPUT	86.65	13.35	77.75	22.25
GANJAM	79.16	10.84	73.51	26.49
PURI	93.90	6.10	92.33	7.67

Source : Census of India , 1971 , Series 16 , B-I , Part A & B
Census of India , 1981 , Series 16 , B- 3 (unpublished)

TABLE - 11

SEX COMPOSITION OF WORKERS (MALES & FEMALES) OUT OF 100 WORKERS, WEST BENGAL 1971-81

State/ Districts	1971		1981	
	% Male worker	% Female worker	% Male worker	% Female worker
WEST BENGAL	92.52	7.48	90.20	9.80
DARJEELING	71.97	28.03	73.62	26.38
JALPAIGURI	84.83	15.17	83.35	16.65
COOCHBIHAR	97.07	2.93	94.40	5.60
W.DINAJPUR	95.26	4.74	90.96	9.04
MALDA	93.86	6.14	89.63	10.37
MURSHIDABAD	95.02	4.98	91.96	8.04
NADIA	96.13	3.87	94.13	5.87
24-PARGANAS	96.68	3.32	94.95	5.03
HOWRAH	97.67	2.33	96.48	3.52
CALCUTTA	94.05	5.95	92.64	7.36
HOOGLY	91.64	8.36	89.80	10.20
BURDWAN	91.39	8.61	89.54	10.46
BIRBHUM	91.87	8.13	90.34	9.66
BANKURA	86.40	13.60	81.98	18.02
MIDNAPORE	90.84	9.16	88.11	11.89
PURULIA	84.69	15.21	78.37	21.63

Source : Census of India , 1971 , Series 22 , B- I , Part- A &B
          Census of India , 1981 , Series 22 , B-3 (unpublished)

TABLE : 12

DISTRICTWISE CLASSIFICATION OF FWPR IN EASTERN INDIA - 1971

RANGE	BIHAR	ORISSA	WEST BENGAL
20% +	Nil	Nil	Darjeeling
15% - 20%	Nil	Nil	Nil
10% - 15%	Champaran, Ranchi, Gaya, Palamau, Bhagalpur, Saharsa Singhbhum	Boud-Khandamala, Mayurbhanj, Ganjam	Nil
5% - 10%	Muzaffarpur, Darbhanga, Dhanbad, Saran, Purnea, Hazaribagh, Monghyr, Sahabad, Santhal Parganas, Patna	Kalahandi, Bolangir, Sundargarh, Keonjhar, Koraput Sambalpur.	Burdwan, Bankura, Puruliya Jalpaiguri, Calcutta.
Below 5%	Nil	Balasore, Cuttack, Puri, Dhankanal	Howrah, Coochbihar, Nadia, Twentyfour Parganas, Malda, Murshidabad, West Dinajpur, Birbhum, Hoogly, Midnapore.

TABLE : 13

DISTRICTWISE CLASSIFICATION OF FWPR IN EASTERN INDIA — 1981

RANGE	BIHAR	ORISSA	WEST BENGAL
20% + above	Nil	Mayurbhanj	Nil
15% - 20%	Saharsa, Ranchi	Koraput, Phulbani, Ganjam	Darjeeling
10% - 15%	Purnea, Santhal Parganas, Gaya, Palamau, Singhbum	Kalahandi, Bolangir, Sundar-garh, Keonjhar, Sambalpur	Bankura, Puruliya, Jalpaiguri
5% - 10%	Darbhanga, Hazaribagh, Munger, Sahabad, Patna, Champaran, Bhagalpur	Dhenkanal	West Dinajpur, Malda Birbhum, Hoogly, Midna-pore, Burdwan, Calcutta
Below 5%	Muzaffarpur, Saran Dhanbad	Balasore, Cuttack, Puri	Howrah, Coochbihar, Nadia Twentyfour Parganas, Murshidabad.

TABLE : 14

STATEWISE INTERSECTORAL VARIATIONS IN FWPR (1971 & 1981)

STATES	YEAR	SD/CV	TOTAL FWPR	PRIMARY SECTOR	SECONDARY SECTOR	TERTIARY SECTOR
BIHAR	1971	SD	2.2	2.2	0.2	0.2
		CV	24.1	26.1	70.0	53.9
	1981	SD	3.8	3.6	0.3	0.3
		CV	38.9	41.2	65.1	62.1
ORISSA	1971	SD	3.3	3.0	0.4	0.4
		CV	46.4	54.9	53.7	41.5
	1981	SD	5.6	5.2	0.6	0.3
		CV	47.1	33.1	53.7	29.4
WEST BENGAL	1971	SD	4.8	4.7	0.2	1.1
		CV	85.3	111.6	46.1	117.7
	1981	SD	4.5	4.6	0.6	1.2
		CV	63.4	95.5	62.1	99.2

Where SD = Standard deviation

CV = Coefficient of variation.

APPENDIX - 1

A. DISTRICTS WHERE THE SHARE OF PRIMARY SECTOR INCREASES OVER THIS PERIOD 1971-1981.

1. Phulabani 2. Koraput 3. Ganjam 4. Keonjhar

5. Kalahandi 6. Bolangir 7. Dhenkanal 8. Belasore

9. Sambalpur 10. Sundargarh 11. Cuttack 12. Puri

13. Ranchi 14. Calcutta.

B. DISTRICTS WHERE THE SHARE OF PRIMARY SECTOR DECREASED.

1. Maurbhanj	12. Darbhanga	23. Birbhum
2. Sarharsa	13. Muzzarffarpur	24. West Dinajpur.
3. Champaran	14. Patna	25. Burdwan
4. Purnea	15. Santhal Parganas	26. Hoogly
5. Palamau	16. Singhbum	27. Malda
6. Gaya	17. Dhanbad	28. Cooch Bihar
7. Saran	18. Puruliya	29. Nadia
8. Bhagalpur	19. Jalpaiguri	30. Twentyfour Parganas.
9. Sahabad	20. Bankura	31. Murshidabad
10. Hazaribag	21. Darjeeling	32. Howrah.
11. Munghyr.	22. Midnapore.	

APPENDIX - 2

1. Increase in Primary Sector by Percentage Points.

Above 5% Ganjan, Keonjhar, Kalanandi, Bolangir,
          Sambalpur, Sundargarh.

Between   Phulbani, Korapu t, Dhenkanal, Balasore.
1% to. 5%

Below 1% Cuttack, Puri, Ranchi, Calcutta.

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2. Decrease in Primary Sectors' share by Percentage.

Above 5% - Malda, Nadia, Twentyfour Parganas, Murshidabad,
           Howrah, Santhal Parganas, Dhanbad.

Between - Mayurbhanj, Puruliya, Jalpaiguri, Bankura,
1% to 5%   West Dinajpur, Darjeeling, Midnapore,

           Birbhum, Burdwan, Hoogly, Cooch Bihar, Sahabad,
           Champaran, Palamau, Saran, Bhagalpur,
           Hazaribag, Darbhanga, Muzaffarpur, Patna,
           Singhbhum.

Below 1% - Saharsa, Purnea, Gaya, Munghyr.

APPENDIX - 3.

NAME OF THE DISTRICTS IN THE SIX CATEGORIES:-

(i) <u>P↓S↑T↓:</u>   Mayurbhanj, Pumea, Gaya, Birbhum, West Dinajpur, Burdwan, Hoogly, Malda, Coach Bihar, Nadia, Murshidabad.

(ii) <u>P↓S↓T↑:</u>   N I L.

(iii) <u>P↓S↑T↑:</u>   Saharsa, Champaran, Palamau, Saran, Bhagalpur, Sahabow, Hazaribag, Munghyr, Darbhanga, Muzzaffarpur, Patna, Santhal Parganas, Snighbhim, Dhanbad, Puruliya, Jalpaiguri, Bankura, Darjeeling, Midnapore, Twentyfour Parganas, Howrah.

(iv) <u>P↑S↑T↓:</u>   Koraput, Sundargrh, Calcutta, Ranchi.

(v) <u>P↑S↓T↑:</u>   Balasore, Cuttack, Puri.

(vi) <u>P↑S↓T↓:</u>   Phulbani, Ganjam, Keonjhar, Kalendi, Bolangir, Dhenkanal, Sampalur.

CHAPTER - IV

REGIONAL VARIATIONS IN FEMALE WORKFORCE PARTICIPATION RATES

CHAPTER - IV

REGIONAL VARIATIONS IN FEMALE WORKFORCE PARTICIPATION
RATES

The previous chapter was devoted to a
discussion of the pattern of female workforce
participation in which the difference in the
participation rates among the states and dist-
ricts were brought out. The difference as well
as similarity (in some cases) in the sectoral
changes of the states and districts was noticed.
For example, in Bihar, in 1971, the difference
between the highest FWPR district (Saharsa
13.7 percent) and the lowest (Muzaffarpur 5.2
percent)was 8.5 percentage points. In 1981, the
differences increased to 14.2 percentage points,
(Ranchi 16.7 percent and Sitamarhi 2.5 percent).
In Orissa, this difference in 1971 worked out to
10.7 percent (Ganjam 13.3 percent and Puri 2.6
percent), and increased to 17.0 percent in 1981
(Mayurbhanj 20.8 percent and Puri 3.8 percent).
The corresponding figures for West Bengal in
1971 and 1981 were 20.3 percent and 17.7 percent
(Table 3,4 and 5)
respectively. /These figures, though give an

overall idea about the differences in FWPR
that exist among states as well as districts,
were not enough to explain as to how far this
degree of variation was there in a particular
state and not sufficient to get a comparative
picture. The study of variation in FWPR in a
particular state is important as in some of the
districts the FWPR was very high while in some
others it was very low. Since the percentages
are not enough to show the degree of variation
that may exist in a particular state the statis-
tical methods; standard deviation and coefficient
of variation will be worked out in this chapter.

By working out the standard deviation and
coefficient of variation it was found that the
degree of variation was very low in Bihar in both
the years, 1971 (c.v. 24.1 percent) and 1981 (38.9
percent). The coefficient of variation was highest
in West Bengal for both the time periods (85.3 and
63.4 percent). Orissa came in between these two
states with coefficient of variation in FWPR of
46.4 and 47.1 percent for 1971 and 1981 respec-
tively. From this one can say that in case of Bihar

and, to some extent, Orissa the variability in
FWPR among the districts was low and consistent
while West Bengal had a wide range of variation
in its districtwise FWPR. In other words, out of
the total workers, a few districts had a large
share of the female workers while a large number of
districts had a very small share, which was the
case of West Bengal. Another important trend in
FWPR was noted in Bihar and Orissa,the variation
in FWPRs from the mean FWPR are more consistent
than West Bengal and in their case both S.D. and
C.V. values were increased, but in case of West
Bengal both the values declined between 1971 and
1981. (Table - 14)

In order to show as to how far these
variations in overall FWPR of a particular state
were affected by the variations in three economic
sectors S.D. and C.V. of these sectors were also
calculated separately. In case of primary sector,
except Bihar, the other two states were showing
high variation in comparison to the other two
sectors. The variation of FWPR in Bihar in

primary sector is very low i.e. 26.1 and 41.2

percent for 1971 and 1981 respectively, with

high inequality in the other two sectors. From

1971 to 1981 the variation in primary and ter tiary

sector increased but the same declined in respect

of the secondary sector. In case of ter tiary

sector, in Orissa, the variation was low in both

the time periods. While the variation increased

in case of secondary sector, though marginally,

it declined slightly in case of primary sector.

But the decrease in case of ter.tiary sector was very

substantial — from 41.5 percent in 1971 to 29.4 per-

cent in 1981. (Table -14) West Bengal showed an extreme case

of variation in both its primary and ter.tiary

sectors, while the variation in secondary sector was

more or less same like the case of Orissa and

Bihar. In this state in primary and ter.tiary

sector the variation declined, whereas it increased

in case of secondary sector. The reasons why there

was variations in FWPR, in the three sectors both

in respect of time and across space may be many.

One of the important reasons may be the economic

changes that took place in a particulat state over

the decade. With changes in economic character of
a state there is also a sectoral shift in the eco-
nomy, but the influence of this economic change
may not be the same for all the districts. While
some of the districts get developed due to their
industrialisation or due to certain other factors,
the others may have an increase in their agricultural
activity. This causes the variation in the three
sectors in FWPR to shift with the change in the
economic activity. Again in case of those districts,
where there is rapid increase in the degree of urban-
isation, the economic activity of the people will
also change, while in case of other districts the
pattern of work participation may stay more or less
the same, or change marginally which causes higher
level of variation. These variations though in
different degrees in different states, were due to
the differences in the levels of economic develop-
ment among districts. Thus variation in the degree
of development will affect the degree of variation
in FWPR.

Causes of variations in the total FWPR:

A question may now be raised as to why this
variation exists in a particular state, and why a

particular inequality in the FWPR is high or less than

the other ? There may be various factors which

may cause this inequality to prevail in a particular

state. One can see from the previous description

that the inequality in the total FWPR may arise

due to the fact that while the FWPR for some of

the districts are high, for others, they were very

low. In contrast, it may so happen that the dist-

rictswise FWPRS are more or less the same implying

low variation in the FWPR. Thus the degree of

inequality depends upon the way, how the districts

of a state are distributed according to their

FWPRS. This leads to yet another question as to

why some of the districts are having high FWPR in

contrast to the others with low values. This

question can be answered only after considering the

various factors that may influence FWPR either

positively or negatively. Since the influence of

the factors are not the same in case of all the

districts and again the distribution of these

factors among the districts are not equal, this

might have led to the variations in the FWPRS.

The female workforce participation rate
is dependent upon some of the socio-economic and
demographic factors. These factors may influence
the FWPR either positively or negatively and the
FWPR depends upon the degree at which these factors
influence it. As discussed earlier, level of econo-
mic development of a district would probably be the
most important factor to influence FWPR. It is
believed that, /modernisation, workforce partici-
pation of female would gradually decline both in
agriculture and industry and even in the services
sector at an early stage of economic development.
In the traditional society women contribute equally
or more to the income of the household as a parti-
cipant in the husband-wife team. But as modernisa-
tion due to development plans gradually enters into
agriculture, the production process becomes capital
intensive, and, in twin brings down the FWPR. Thus
the females loose their jobs to the males as they
are late starter and in disadvantageous position
to acquire training and education needed to
participate in the production process of capital

intensive production.

In the states or countries where culture prevents women from doing anything outside home, they may work in home or in cottage industry as an initial step in entering labour force. Men either work with them or enter into the industry where income is high. But when importance to the development of industries are given at the cost of the cottage industries, to attain high rate of economic growth, women will loose their jobs as it would becomes quite difficult for them to compete with man who had enjoyed the training and educational facilities (Boserup, quoted in E.P.W. 1974:   ). Again in the process of economic development quite a few jobs may be created in the services sector but however the females will be confined to the old jobs of low status and income. Thus economic development will have a adverse effect in the FWPR of a country/state. So in the next chapter the composite index of socio economic development of the districts will be worked out and the hypothesis that economic development has an inverse relationship with FWPR will be tested.

When one goes to study economic factors
which may be affecting the participation of
female in the workforce one can cite economic
need as one of the important factor. "Economic
need has been repeatedly cited as one of the
most important factors compelling women to join
the labour force. Women, teenagers and aged
people are most elastic to changing labour
market conditions. They usually work as the
secondary bread-winners in the family. If the
wages are sufficiently high they need not augment
the family income, but if the wages are low, one
man's earnings may not suffice for the family
(Srivastava, 1978:2). This is what is the case
of most of the underdeveloped countries of the
world. The women's workforce participation is
very high in case of the lower class people
with low incomes (Douglas, quoted in Srivastava
1978:2), based his theory of wage on a labour
supply which declines with rising wages. He
showed that high average income of the man is
associated with low female participation and

vice versa. But there are many contradictions in
this theory so far as, in most of the developed
countries with rise in the GNP and per capita
income the female participation is also increa-
sing.

Income of the husband and family:—

Income of the household or husband to
which his education and jobs status are closely
linked is an important factor in determining the
female workforce participation. It may so happen
that the wives with a high education who has high
education who has high income husband may work
for personal satisfaction rather than for economic
reasons. Some of the females whose husbands are
highly placed in the income status, though
interested in entering into the labour force, may
not participate in the workforce due to the fact
that they may not get the jobs equivalent to their
husband's socio-economic status and participation
in low paid jobs will bring down their status and
prestige in the society. Thus, it is generally
the case that the higher the husband's income, the

less likely is wife's employment. Wives whose
husband are unemployed are most likely to join
the labour force, while wives with self-employed
professional husbands are least likely to do so.
This trend, however, is more ambiguous in case
of middle income groups and socio economic class.
While in some places wives of manual workers and
skilled workers are more likely to work than
wives of white collar workers, in some other place
the reverse may be true. Hence cultural influences
and the attitude of husband and that of the
wives are likely to be contributing factors (OECD,
1975:27-28). However, in this study this factor
(income of the household) will not be taken into
consideration due to the non-availability of
districtwise data.

Wage rate and female workforce participation:-

Wage is one of the economic factors which
may affect the FWPR. General theory is that
whenever the wage rate is high the supply of
labour is high and vice versa. But it may so
happen whenever in a particular sector the pre-
vailing wage rate is very low in comparison to

other sectors then the male workers will leave
the work in that sector and go for work in the
other, thus leaving their jobs to the females.|
|Again from the demand side, the employers always
prefer the female workers in the rural area since
he can make them work for long hours and still pay
a lower wage. | Thus wage will have an important
influence over the FWPR.

Since in most countries a type of exploita-
tion is prevalent wherein females are offered a
lower wage than their male counterparts for the
same work, the female participation is less in
comparison to the male participation in labour
force. In this regard Bardhun, says, "The wage
response to labour supply seems to be significantly
positive for the set of agricultural labourers and
small cultivators, and also that of women in the
rural labour force. The wage response is not signi-
ficant for the total labour supply for the set of
cultivators of all size groups taken together. There
seems to be some evidence for atleast a locally

backward bending supply curve of labour for the set of all adult women (primarily housewives) and the hired out farm labour for the set of cultivators of all size taken together. Even when the wage response of hiring out farm labour is positive, as in the case of agricultural labourer and small cultivators, it is not very large (Bardhan, 1979: 76).

The next factor we can say is the job opportunities available to women. In a particular society when the male unemployment is high female workforce participation must remain low. In this situation it is naturally difficult for women to compete with men since, in most cases the former lack skills and training. Hence we generally find women in those jobs which men think of inferior type for themselves, and where wages are very low. Thus according to Sawant and Dewan, "Women's access to labour market, in general, depends upon number of jobs available and also in the numerical dominance of male claimants for the job" (Sawant and Dewan 1979: 1096).

Agricultural Factors:-

The FWPR can also be influenced by the cropping patterns. It has a direct role to play. The FWPR' of a particular district depends upon the 'type of crop' produced in that area.

In a district where the major crop, produced involves certain activities which are easy to handle and do not require physical strength, the FWPR will be high. The best example being Darjeeling and Jalpaiguri districts where the major crop, tea plantation — requires a lot of female labour for various operations. There exists a direct relationship of cropping pattern and FWPR in the rural areas. In rice cultuvation the FWPR is high because females are specially suited for certain activities like transplantating, weeding and thresing (the first job being an exclusive task of females). In contrast, in wheat cultivation the trend is just the reverse, since it involves more strenous work and requires skill and strength (Gulati, 1975: 37).

Other agricultural indicators like yield
per acre also influence the FWPR. These agri-
cultural indicators are important in this study
due to the fact that the percentage of female
workers in the agriculture sector is very high
and their participation in this sector deter-
mines the total FWPR.

Irrigation :-

Irrigation facilities lead to intensive
cultivation .With intensive cultivation, use
of high yielding variety seeds, fertilisers
and labour is inevitable. Thus intensive cul-
tivation will result in increased income of the
household; consequently, there will be gradual
withdrawl of females from workforce. Again, in
many cases, irrigation leads to high mechanisa-
tion in agriculture and cultivation of commercial
crops where the demand for the female labour may
decline. Thus in both the cases the influence of
the development of irrigation facilities on FWPR
is negative (Reddy, 1975:7).

Yield per acre may be having a relation-
ship with the female workforce participation.
Whenever the production per unit is high than
the income per capita in that area will be high,
thus gradually discouraging the females to
enter into the labour force.

Industry :—

Number of industries is yet another indica-
tor of FWPR. This factor may influence FWPR in
both positive and negative way. In the first case,
the presence of increased number of industries in
a particular area will divert the male labour force
towards it with its high wage and other facilities
and would create more vacancies in the agricultu-
ral sector for women, thus increasing their work-
force participation rate. The main constraint in
this formulation isthe unemployment situation of
the male labour force in the agriculture sector.
The high unemployment rate for males in this sector
may block the entry of the females into the new
vacancies. Again, increased number of cottage in-
dustries will also have increased number of female

workers in the household sector. But increase

in the large scale capital intensive industry

may have an adverse effect on the FWPR, in so

far as they overtake cottage industries market.

In this case the females employed earlier in the

household industry will be jobless because they

are not in a position to compete with the males

to enter into the more skilled and semi-skilled

jobs due to their low training and education.

Scheduled caste and Scheduled tribe
population as a factor :—

There happens to be a positive link bet-

ween the Scheduled Caste and Scheduled Tribe

population and the FWPR. The districts/states

where the proportion of the scheduled population

to the general population is high, the FWPR in

those districts/states would be high, since women-

folk of the scheduled castes and the scheduled

tribes perform work in order to have necessary

sustenance. This can be proved from table below.

The table clearly depicts that in all the three

states the FWPR of scheduled caste and scheduled
tribes females were high, in both 1971-81, in
comparison to the general female population.

TABLE -____

WORKFORCE PARTICIPATION OF FEMALES IN
SC, ST & NON SCHEDULED POPULATION

	Year	Bihar	Orissa	West Bengal
NS	1971	6.0	4.2	3.0
	1981	5.9	6.2	3.7
SC	1971	22.2	11.1	5.3
	1981	19.8	15.8	6.6
ST	1971	13.8	11.0	19.9
	1981	19.2	19.8	29.1

NS indicates 'Non-Scheduled population'.

Then the question may arise why the work-
force participation of Scheduled caste/Scheduled
Tribe females is high. There are some socio-

economic factors which are influencing their
FWPR. In case of the high caste females the
participation is low due to the cultural back-
ground of our society which maintains that
females should be contained in the household.
While in case of the high caste females it is
a status symbol to confine themselves to the
household, in case of the scheduled female
population it is the economic factor which
compels them to work outside. For this, in most
of the tribal society bride price is given to
the father of girl as he is going to loose a
worker who might have given economic help to
the family.

Education and female workers:-

Literacy is an important indicator in
influencing the female workforce participation.
The hypothesis one can make here is: with the
increase in the literacy rate in the early stage
of economic development, the female workforce
participation will decline. In latter stages of

development, however, increase in higher education will increase the FWPR. So literacy may have both the positive and negative effects on the RWPR. In case of India one can/see that the FWPR for the illiterate is very high, again it is also high for the highly educated females. But in case of females with medium education it is very low. While taking into consideration education as a factor affecting the FWPR one has to consider the rural-urban differential of FWPR. In case of rural areas the relation is negative while in case of Urban area it is positive because the work participation rate of illiterate females in the former case is high while in the latter case it is high for highly educated females. So the curve pertaining to the educational attainment and female workforce participation will be 'U' shaped.

Sex Ratio:—

It is always true that there is a positive relationship between the sex ratio* and FWPR. The main argument in favour of this hypothesis is that

* Sex ratio is defined as number of females per thousand males.

where the number of females to the males is more, the former has to carry a greater responsibilities for the family's livelihood .Hence the female participation rate will be high.

Male work force participation :—

Male workforce participation can also affect the FWPR. The relationship will be negative i.e., increased male participation rate in workforce will reduce the female participation. This is because the increased participation of male in the workforce will reduce the role of the female as the bread winner of the family. It is always observed that whenever the husband is unemployed the wife has to work to support the family. Except particular jobs meant for women, high participation rate of male in the workforce will reduce the opportunity of females in entering to some of the other jobs, as they have to face stiff challenge from men. Here female cannot compete with men in these jobs

because they are less educated and trained as well as for some biological differences.

Urbanisation :—

It is known that there exists a marked difference in the participation rate of female workers in rural and urban areas. While the participation rate is high in rural areas it is very low in urban areas as seen in case of Bihar, Orissa, and West Bengal. There may be many reasons as to why the rural women join the work-force in larger numbers than urban woker. As indicated earlier, in rural areas women get jobs within their family or near to their home, in many cases, they work on family farms with their men folk. This is definitely a positive point which encourages them to enter into the labour force. In urban areas the case is just opposite. Again, the demand for female workers in rural area is high as they are ready to accept low wage thus leaving the employer

to gain maximum out of this. In rural areas female   get work easily which are un-skilled and low status jobs which need not require training and education, here the employer prefers the female to male workers, which is beneficial for them (Bardhan, 1974:1304). From this one can say, the participation rate of female in workforce in urban area is very low in comparison to the rural area, and thus can hypothesize that the relationship between the urbanisation rate of a district and its FWPR is negative i.e. with the increase in the urbanisation the female workforce participation will decline.

Dependency Ratio :—

Dependency ratio* is yet another important factor which may affect the FWPR in a district.

_____

$$* \text{ Dependency ratio} = \frac{\text{Population}(0-15)_y + (60 \text{ \& above})_y}{\text{Population}(15-59)_y} \times 100$$

y :— Year Group.

Whenever there is a high dependency ratio in a district then the FWPR will be high. This may be due to the reason that when there are many dependents in family, then in the lower income group as well as in the middle income group families, earning of the male breadwinner will not be sufficient enough to provide the basic requirement of the family, thus necessiating the females to enter into the labour force. Since the number of families, in the states under study, in the low and middle income group are very high, the positive effect of dependency ratio on the FWPR will hold good. The dependency ratio may have different effect on the FWPR if one divides it into young* and old* dependency ratios.

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*Young dependency ratio $= \dfrac{Population_{(0-15)_y}}{Population_{(15-59)_y}} \times 100$

*Ole dependency ratio $= \dfrac{Population_{(60 \; \& \; above)_y}}{Population_{(15-59)_y}} \times 100$

In case of the former if large number of dependents are in the age group below the school going age, then it will adversely affect the FWPR. Here the effect is more than the family maintenance point then due to income point. However in case of the latter the effect is always positive.

TABLE : 14

STATEWISE INTERSECTORAL VARIATIONS IN FWPR (1971 & 1981)

STATES	YEAR	SD/CV	TOTAL FWPR	PRIMARY SECTOR	SECONDARY SECTOR	TERTIARY SECTOR
BIHAR	1971	SD	2.2	2.2	0.2	0.2
		CV	24.1	26.1	70.0	53.9
	1981	SD	3.8	3.6	0.3	0.3
		CV	38.9	41.2	65.1	62.1
ORISSA	1971	SD	3.3	3.0	0.4	0.4
		CV	46.4	54.9	53.7	41.5
	1981	SD	5.6	5.2	0.6	0.3
		CV	47.1	33.1	53.7	29.4
WEST BENGAL	1971	SD	4.8	4.7	0.2	1.1
		CV	85.3	111.6	46.1	117.7
	1981	SD	4.5	4.6	0.6	1.2
		CV	63.4	95.5	62.1	99.2

Where SD = Standard deviation

CV = Coefficient of variation.

FACTORS AFFECTING FEMALE WORKFORCE PARTICIPATION

CHAPTER - V

FACTORS AFFECTING FEMALE WORKERS PARTICIPATION

In the previous chapter a general discussion
was presented to identify the factors affecting FWPR-
both at regional and sub regional levels. The present one
is an attempt to quantify such factors operating at local
level and to see the extent to which they are responsible
in changing FWPR. As economic, Social-cultural and
demographic variables and FWPR are interlinked in a
particular region it will be worthwhile to examine
statistically the earlier cited hypotheses in the
context of factors discussed above.

The analysis was undertaken dividing the states
into three sectors of total, rural and urban. To test
how much the FWPRs of these sectors have been affected,
various independent variables were chosen, because these
indecators will explain movement of the dependent
variable (FWPR) while factors like male workforce
participation, percentage of SC females to total female
percentage of ST females to total females, literacy
rates, sex ratio, young dependency ratio, old dependency
ratio, average size of the household and number of
industries per 10,000 population were kept constant in
case of all the sectors, degree of urbanisation and

percentage area under irrigation were added to the total area model. Alongwith the common indicators, in case of the model for rural area, factors like area irrigated and area under rice, were also considered.

To test all the three models (representing the dependent variable i.e. FWPR and the respective idenpendent variables) multiple regression and F-Test were carried out. While in some of the cases the F value cameout to be significant with all the independent variables, in some other cases they gave insignificant values. So in the latter cases, the null-hypothesis Prevailed rejecting the model. The proposition in this case is that there must be some indicators in these types of models which do not explain the movement of the dependent variable. In other words in our context it means, there must be some factors which are not affecting the FWPR in that particular sector of a particularstate. Therefore, a series of regressions were computed with various combinations of factors. Mathematically, in this case, the degrees of freedom were reduced by increasing the indicators and keeping the districts constant, since

$$F = \frac{R^2/(K-1)}{(1-R^2)/(n-k)} = \frac{(R^2)\ (n-k)}{(1-R^2)\ (K-1)}$$

while in some cases the general model showed signi-
ficant F value with all the variables or factors
,chosen for the analysis, in other cases some of the
variables had to be removed in order to get a signi-
ficant value of F. For example in 1971, in Bihar where
in case of total and urban model, with allthe indicators,
the F values became significant, while in for rual area
the indicator, male workforce participation, had to be
deleted in order to get significant F value. This explains
that in Bihar in 1971, while all the chosen factors seemed
to affect the FWPR in total and urban areas, in rural
area one can say that male workforce participation rate
has nothing to do with the FWPR. Likewise in case of
Orissa and West Bengal we have to remove some of the
variables from the general model, which were mathemati-
cally not explaining the movement of FWPR, thus making
the F value insignificant (where null hypothesis prevails)
The factors which were removed from the general model
in cese of Bihar, Orissa and West Bengal for the both
time periods can be seen in the Appendix -4   .

R^2 and $\bar{R}^2$:- Coefficient of determination :-

In order to know how good is the fit of the regression line to the sample observation of Y and X_1, X_2, X_3 .... X_n, that is to say, are need to measure the dispersion of observation around the regression line. From this one can see that the closer the observation to the line, the better the goodness of fit, that is the better the explanation of the variation of Y by the changes in the explanatory variables. R^2 shows the percentage of the total variation of the dependent variable that can be explained by the independent variables. When the explanatory variables are more than one, it is the case of multiple corerelation. The square of the corerelation coefficient is called the coefficient of multiple determination or squared multiple correlation coefficient, which is denoted by R^2. The value of R^2 lies between 0 and 1. The higher the R^2 the greater the percentage of variation of Y explained by the regression plane, that is the better the 'goodness of fit' of the regression plane to the sample observations. Closer the R^2 to zero, the worse the fit (Koutsoyiannis, 1977: 69,121,129).

The adjusted coefficient of determination is the $\bar{R}^2$. In case of R^2 it is unadjusted. Inclusion of

additional explanatory variables in the function can
never reduce the coefficient of multiple determination
and usually raise it. By introducing a new regrossor
one increase the value of the numerator of the exp-
ression for R^2, while the denomenator remains the same
To correct for this defect one adjusts R^2 by taking into
account the degree of freedom, which clearly decrease
as new regressor are introduced in the function. The
expression for the adjusted coefficient of multiple
determination is:

$$\bar{R}^2 = 1 - (1 - R^2) \frac{n-1}{n-k}$$

$$\text{or} \quad \bar{R}^2 = 1 - \frac{e^2/(n-k)}{y^2/(n-1)}$$

where R^2 is the unadjusted multiple correlation coefficent,
in is the number of sample observations and k is the
number of parameters estimated from the sample-

If n is large R^2 and $\bar{R}^2$ will not differ much.
But with small samples, if the number of regressors
(X's) is large in relation to the sample observations,
$\bar{R}^2$ will be much smaller than the R^2 and can even
assume negative values, in which case $\bar{R}^2$ should be
intropreted is being equal to zero, which is true in
this study, since the R^2 is greater than $\bar{R}^2$ because

the number of samples are small in comparsion to the number of explanatory variable.

Coming to the present study the $\bar{R}^2$s were given in table   . From the table one can see that the $\bar{R}^2$ is the maximum in case of Orissa total area 1971, is 0.996. From this one can say that given the number of independent variables, it is the equation which is the best one for 'goodness of fit' explanation in other words these explantary variables explained were than 99 per cent of the variation in the dependent variable, . The worst explanation was given by the regression equation of Bihar urban area 1981, where the value of $\bar{R}^2$ is 0.046, which means the given independent varaible wereable to explan only .6% of the variation in the dependent variables, Taking this point as granted one can say that the regression equation in case of Orissa for both the time period 1971 and 1981 the explanation of the variation in dependent variable was marked. In case of Bihar however the $\bar{R}^2$ values are comparatively low, which means, the explanation given by the independent variables for the variation Y (dependent variable) is very low in percentage term. In case of West Bengal the independent varriables are

Explaning the variation in the dependent variable, is average.

From the pattern itself one can see wide variations of FWPR among the districts of these states. There were various factors, as discussed in the previous chapter, that might have caused these variations. In this portion of the chapter these factors will be discussed as tested by the zero order correlation and multiple regression and it will be shown whether these factors either positively or negatively, related to the FWPR or not. If they have any relationship with the FWPR, then it will be discussed whether the relation was significatn or not.

Relationship between FWPR and other factors:

In order to show the relationship between the factors, chosen for regression analysis and FWPR, zero-order correlation was applied. This statistical tool helped us to show the relationship of the FWPR with each factor. While these factors have either negative or positive relationship, some of them are significantly related to bhe FWPR. This can be proved when we will test them separately.

Male Work Force Participation

Male work Force participation as a factor has negative relationship with FWPR. Contradiction to the hypothesis was found sofar that in all the states in 1971

and for all the areas it was positive. But in 1981 the
relationship was not positive for all the cases. In.
case of west Bengal it has negative relationship both
in urban and total area, for urban Orissa also it was
negative. In 1971 only in case of Bihar-urban it was
a significant (5%) relationship with FWPR. In 1981 its
relationship with FWPR was significant in three cases.
While it was highly significant (1% level) in case
of Bihar rural area, in case of Bihar total and Orissa
rural area, it was significant at the 5% level. (Table-22 & 23)

Percentage of Scheduled Caste Population (Female):

This factor's relationship with FWPR was negative
for almost all the cases, except the urban area, in 1971
for all the three states. Between 1971 and 1981 it had
a significant relationship only in one case i.e. in Orissa
urban in 1981, which also showed a positive relationship.
From this one can say that the relationship between this
factor and FWPR was negligible in these three states for
both the time periods. (Table 22 & 23)

Percentage of scheduled Tribes Population (Female):

Whenever there is a large scheduled tribes population
in the total population the participation rate is high for

that area. The hypotheses of positive correlation
between the two was proved in the study. From the
figures one can see that in every case it showed a
positive relationship with FWPR. It showed the maximum
significant relation cases compared to other factor[s].
In 1971 its relationship was significant with FWPR in
case of West Begal total (**), Rural(**) and Orissa
urban (*). In 1981 this factor had a significant positive
relationship with the FWPR in almost all the cases except
Bihar and West Bengal-urban area. From this one can
concluded that the relationship was the maximum in 1981. (Table-2283)

Literacy Rates:-

The general hypothesis is that, this factor may
have either positive or negative relationship with FWPR
It will have positive relationship in urban area and negative
in case or rual area. In 1971 in rural sector only in
case of Orissa - rural it had a negative relationship
which was also significant (*) while in case of the
other two states just the opposite is observed. In
1981 in rural areas in all the three states, the hypothesis
holds good. Again in this case, in Orissa-rural, it
continued to be significant but this time more signficant
than the 1971 case. In this time period in Orissa total

* for significance at .05 level
** for significance at .01 level

area also these factors showed a significant relationship with FWPR. (Table 22 & 23)

Sex Ratio:

In 1981 its relationship with FWPR was positive in all the cases but in case of 1971 the relationship seems to have diversions. In 1971 while it was negative in case of Bihar and West Bengal rural area, in urban and total area in case of Bihar, it had a negative relationship. Only in case Bihar urban (*) it showed a significant relationship with FWPR. In 1981 in case of Orissa-rural and urban it showed significant relationship with FWPR. (Table-22 & 23)

Young Dependency Ratio:

In 1971 in all cases except Bihar total and rural area and Orissa urban area, this factor had a negative relationship with FWPR. Only in case of West Bengal rural (**) it showed a significant relationship with FWPR. In 1981 in all cases barring Orissa total and urban areas, this factor showed a negative relationship with FWPR. Again it shows a significant relationship with FWPR in case os West Bengal rural area(**). (Table-22 & 23)

Old Dependency Ratio:

Relationship between this factor and FWPR was always negative but incase of West Bengal urban area it has a positive relationship. In 1971 its relationship was found

out to be siginificatn in case of West Bengal total
and rural (**), Bihar and Orissa urban areas (*).
This factor showed a significant relationship only in
case of Orissa rural area (*) in 1981.   (Table-22&23)

<u>Average Size of the Household:</u>

Like old dependency ratio this factor's relationship
FWPR was negative both in 1971 and 1981 except in case of
West Bengal urban areas. In 1971 it showed a significant
relationship in Orissa total (*) and rural (**) only.
In 1981 this significant relationship was also found in
the same cases with the addition of West Bengal rural cases.

<u>Degree of Urbanisation:</u>

This factor was considered only in case of total
area. This factor is supposed to have a negative
relationship with FWPR. From the calculation one can see
that the trend was the same both in 1971 and 1981 only
with the exception of Bihar in 1971. In no case it showed
any siginificant relationship with FWPR . (Table-22&23)

<u>Percentage of Area Irrigated:</u>

Its relationship with FWPR was positive in rural
area in 1971. But in 1981 just the reverse heppend,
It showed no significant relationship in both the
time periods in any of the cases. (Table 22&23)

Purcentage Area Under Rice:-

The general hypotheses is that, this factor
will have a positive relationship with FWPR. However
it showed a negative relationship with FWPR and again
it was also not significant in any of these cases. (Table 22 &23

Number of Industries:

In 1971 this factor had a positive relationship
with FWPR except in West Bengal total and rural area
and Bihar urban area. The relationship was also
significant in case of Bihar urban (*). In 1981
its relationship with FWPR varried from area to area
but no where it showed significant relationship with
FWPR. (Table 22 &23)

Null hypothesis:- Change in FWPR is not **affected**
by the interaction brought
about by factors outlined below:

Factors:- X_1 = Male work force participation rate

X_2 = Percentage of SC female to total female pon[n]

X_3 = Percentage of ST female to total female

X_4 = Literacy Rates.

X_5 = Sex Ratio

X_6 = Young dependency Ratio

X_7 = Old dependency ratio.

X_8 = Average size of the household.

X_9 = Degree of urbanisation.

X_{10} = Percentage area under irrigation.

X_{11} = Number of industries per 10,000 Population.

X_{12} = Percentage of area under rice.

Cases:- Since the FWPR was studied from the total
and rural-urban basis the number of cases
where FWPR is relevant to the analysis are:

$$\text{Total} = Y_1$$

$$\text{Rural} = Y_2$$

$$\text{Urban} = Y_3$$

Rejection of null-hypothesis = $Y_i = f(x_i \text{'s for all } x)$
is significant i.e. F^* is significant which
means x_i s are affecting the y_i or change in x_i will bring
change in y_i. The cases of Rejection are :-

Bihar - 1971.

$$Y_2 = f(X_1, X_2, X_3, X_4, X_5, X_6, X_7, X_8, X_9, X_{10}, X_{11}, X_{12})$$
where $F^* = 4.74$ $F(\text{tabulated value})$.

Bihar - 1981.

$$Y_1 = f(X_1, X_2, X_3, X_4, X_5, X_6, X_7, X_8, X_9, X_{10})$$
where $F^* = 4.212$ $F(\text{tab})$.

$$Y_2 = f(X_1, X_2, X_3, X_4, X_5, X_6, X_7, X_8, X_{10}, X_{12})$$
where $F^* = 5.325$ $F(\text{tab})$.

Orissa = 1971

$$Y_1 = f(X_1, X_2, X_4, X_5, X_6, X_7, X_6, X_9, X_{10}, X_{11})$$

Where $F* = 305.98 **$ (F(tab)

$$Y_2 = f(X_1, X_2 \ X_3 \ X_4 \ X_5 \ X_6 \ X_7 \ X_8)$$

Where $F* = 7.27$ F (tab)

$$Y_{3a} = f(X_1 \ X_2 \ X_3 \ X_4 \ X_5 \ X_6 \ X_7 \ X_8 \ X_5 \ X_{11})$$

Where $F** = 10.82$ F (tab)

$$Y_{3b} = f(X_1 \ X_2 \ X_3 \ X_4 \ X_6 \ X_7 \ X_8 \ X_{11})$$

Where $F** = 48.57$ F (tab)

Orissa = 1981

$$Y_1 = f(X_1 \ X_2 \ X_3 \ X_4 \ X_5 \ X_6 \ X_7 \ X_8 \ X_9 \ X_{10})$$

Where $F* = 9.094$ F (tab)

$$Y_2 = f(X_1 \ X_2 \ X_3 \ X_4 \ X_5 \ X_6 \ X_7 \ X_8)$$

Where $F+ = 5.318$ F (tab)

$$Y_3 = f(X_1 \ X_2 \ X_3 \ X_6 \ X_7 \ X_8)$$

Where $F* = 5.035$ F (tab)

West Bengal = 1971

$$Y_{1a}' = f(X_1 \ X_2 \ X_3 \ X_4 \ X_5 \ X_6 \ X_7 \ X_8 \ X_9 \ X_{10} \ X_{11})$$

Where $F* = 4.749 \ F(tab)$

$$Y_{1b} = f(X_1 \ X_2 \ X_4 \ X_6 \ X_7 \ X_8 \ X_9 \ X_{10} X_{11})$$

Where $F* = 5.333 \ F(tab)$

$$Y_2 = f(X_1 \ X_2 \ X_3 \ X_4 \ X_5 \ X_6 \ X_7 \ X_8 \ X_{11}m \ X_{12})$$

Where $F* = 11.78 \ F(tab)$

$$Y_3 = f(X_1 \ X_2 \ X_3 \ X_4 \ X_5 \ X_6 \ X_7 \ X_8)$$

Where $F* = 3.89 \ F(tab)$

West Bengal = 1981

$$Y_1 = f(X_1 \ X_2 \ X_3 \ X_4 \ X_5 \ X_6 \ X_9)$$

Where $F* = 4.267 \ F(tab)$

$$Y_2 = f(X_1 \ X_2 \ X_3 \ X_4 \ X_5 \ X_6 \ X_7 \ X_8)$$

Where $F* = 4.737 \ F(tab)$

$$Y_3 = f(X_1 \ X_2 \ X_3 \ X_4 \ X_5 \ X_6 \ X_7 \ X_8)$$

Where $F* = 5.489 \ F(tab)$

TABLE · 15 (A)

FACTORS AFFECTING FEMALE WORK FORCE PARTICIPATION RATE   BIHAR TOTAL (1971)

DISTRICTS	FWPR Y	MWPR X_1	% SC FEMALES TO TOTAL FEMALE X_2	% ST FEMALE TO TOTAL FEMALE X_3	LITERACY RADIO OF FEMALE X_4	SEX RATIO X_5	YOUNG DEPENDENCY RATIO X_6	OLD DEPENDENCY RATIO X_7	AVERAGE SIZE OF HOUSEHOLD X_8	DEGREE OF URBANIZATION X_9	% OF AREA UNDER IRRIGATION X_{10}	NO. OF INDUSTRIAL UNITS PER 10000 POPULATION X_{12}
PATNA	9.85	48.92	16.8	0.06	15.3	906	81.27	12.6	6.4	32.54	61.56	47.12
GAYA	10.8	50.02	24.9	0.03	9.0	972	85.19	13.38	6.42	7.63	74.69	36.84
SAHABABAD	8.82	48.69	16.8	1.0	10.1	947	83.37	13.25	6.58	8.22	64.95	44.96
SARAN	6.68	47.59	11.5	0.03	6.8	1051	87.29	13.76	6.38	4.2	26.71	36.06
CHAMPARAN	10.14	55.99	14.5	0.6	5.8	931	78.06	10.23	5.62	5.21	26.52	28.58
MUZAFFARPUR	5.19	53.41	16.1	0.02	7.3	989	80.20	13.37	5.71	5.25	6.72	28.91
DARBHANGA	6.23	52.78	14.9	0.006	7.3	983	79.02	11.2	5.41	4.43	10.45	19.64
MONGHYR	8.8	51.4	15.9	1.5	9.2	934	80.19	12.49	5.58	11.87	22.64	31.18
BHAGALPUR	10.92	51.3	11.1	3.7	11.0	914	82.59	12.47	5.64	10.61	15.36	41.5
SAHARSA	13.65	55.22	16.9	0.4	5.5	919	83.68	10.34	5.71	4.54	13.95	15.74
PURNEA	8.5	55.9	11.5	4.1	6.4	918	92.31	10.12	5.52	6.34	9.13	31.35
S. PARGANAS	9.53	54.9	7.2	37.0	6.4	959	81.25	9.34	5.39	5.76	9.53	54.97
PALAMAU	10.84	52.75	25.6	19.2	5.6	963	91.16	11.23	5.55	4.69	25.77	62.5
HAZARI BAGH	7.95	51.02	12.5	11.1	6.4	980	88.39	9.47	5.50	12.87	5.59	38.43
RANCHI	10.19	52.9	4.8	89.2	13.0	973	84.08	10.09	5.39	13.68	3.32	59.47
DHANBAD	6.62	55.19	15.2	11.8	15.1	792	67.14	6.47	4.69	43.51	3.61	37.30
SINGHBHUM	12.92	52.3	3.6	48.0	13.9	942	77.39	8.73	4.99	26.24	5.68	29.61

SOURCES : (1) Census of India, 1971, series 4, Economic Tables (ii) Census Atlas, Bihar - 1971, (iii) Statistical Abstract - 1973, Directorate of Statistics & Evaluation, Govt. of Bihar.

TABLE · 15 (B)

BIHAR : RURAL (1971)

DISTRICTS	FWPR Y	AWPR X_1	% SC FEMALES TO TOTAL FEMALE X_2	% ST FEMALE TO TOTAL FEMALE X_3	LITERACY RADIO OF FEMALE X_4	SEX RATIO X_5	YOUNG DEPEND-ENCY RATIO X_6	OLD DEPEND-ENCY RATIO X_7	AVERAGE SIZE OF HOUSE HOLD X_8	PERCEN-TAGE OF AREA UNDER RICE X_{11}	% OF AREA UNDER IRRI-GATION X_{10}	NO. OF INDUSTRIAL UNITS PER 10000 POPULATION X_{12}
PATNA	11.31	49.89	18.6	0.04	10.0	932	83.37	19.63	6.4	61.56	38.22	31.21
GAYA	11.31	50.56	26.0	0.03	7.5	980	85.67	13.61	6.42	74.69	53.79	30.31
SAHABABAD	9.26	49.0	17.3	1.0	8.7	957	83.92	13.44	6.64	6.64	44.34	38.2
SARAN	6.76	47.65	11.6	0.02	6.1	1061	87.93	13.85	6.38	36.71	40.14	32.13
CHAMPARAN	10.42	56.38	14.8	0.6	4.6	936	78.26	10.31	5.78	26.51	48.04	24.04
MUZAFFARPUR	5.26	53.79	16.3	0.01	6.2	999	80.69	13.56	5.69	6.72	40.57	23.74
DARBHANGA	6.35	53.21	15.1	0.005	6.4	990	79.25	11.3	5.38	10.45	56.37	25.89
MONGHYR	9.51	52.52	16.7	1.6	7.1	944	80.14	12.72	5.55	22.64	13.49	23.97
BHAGALPUR	11.75	52.15	11.6	4.1	8.6	925	83.45	12.67	5.57	15.36	20.31	30.22
SAHARSA	13.93	55.44	17.1	0.4	4.8	925	83.82	10.43	5.71	13.95	33.28	12.85
PURNEA	8.82	56.27	11.6	4.2	5.1	928	93.58	10.25	5.53	9.13	56.27	27.48
S. PARGANAS	9.88	55.55	7.1	38.9	4.8	967	81.47	9.37	5.37	9.53	44.04	52.71
PALAMAU	11.1	53.17	26.3	19.9	4.4	990	91.68	11.28	5.54	25.77	15.45	60.62
HAZARI BAGH	8.37	51.5	12.8	11.9	3.6	1009	89.98	9.95	5.66	5.59	55.68	33.07
RANCHI	10.92	54.40	4.9	65.1	8.4	1001	85.65	10.66	5.39	3.32	61.61	57.83
DHANBAD	6.79	53.89	16.6	16.5	6.3	893	72.73	7.87	5.26	3.61	78.1	22.9
SINGHBHUM	15.29	54.06	3.2	59.3	5.0	998	80.23	9.7	5.03	5.68	83.66	24.28

Sources : Same as in case of Table 15(A)

TABLE · 15(c)

BIHAR : URBAN (1971)

DISTRICT	Y	X_1	X_2	X_3	X_4	X_5	X_6	X_7	X_8	X_{12}
PATNA	4.51	45.81	10.2	0.1	35.1	822	74.87	9.77	6.26	101.78
GAYA	4.24	43.76	11.2	0.67	28.9	8.74	79.71	10.84	6.39	115.82
SAHABAD	3.58	45.48	10.5	0.6	27.6	845	77.45	11.45	5.94	120.47
SARAN	4.5	46.3	7.9	0.3	24.2	850	73.78	11.92	6.41	125.85
CHAMPARAN	4.6	49.55	7.9	0.1	26.0	833	74.58	8.7	5.84	111.09
MUZAFFARPUR	3.71	49.09	11.9	0.05	28.8	821	72.05	10.13	6.05	122.25
DARBHANGA	3.48	44.11	11.2	0.03	28.6	835	74.46	9.43	5.94	110.61
MONGHYR	3.31	43.41	9.5	0.08	25.4	864	80.68	10.63	5.86	84.68
BHAGALPUR	3.5	44.48	7.2	0.2	33.1	821	76.55	10.93	6.23	136.61
SAHARSA	7.22	50.96	18.7	0.2	22.5	804	80.54	8.35	5.76	76.6
PURNEA	3.33	51.17	9.7	1.8	29.1	773	75.24	8.31	5.35	88.52
S.PARGANAS	3.37	45.01	9.3	3.4	35.6	820	77.63	8.97	5.81	91.99
PALAMAU	4.99	44.72	4.7	4.7	31.8	842	80.38	9.91	5.80	1.02
HAZARIBAGH	4.77	48.12	10.7	5.8	27.6	799	78.64	6.48	4.62	74.76
RANCHI	5.04	44.29	4.3	18.1	45.5	815	74.68	6.71	5.35	69.82
DHANBAD	6.37	56.68	13.1	5.4	28.4	675	60.52	4.82	4.12	56.00
SINGHBHUM	5.56	47.85	5.0	12.1	42.2	802	69.97	6.15	4.91	44.57

Source :   Same as in case of Table · 15(A)

TABLE - 16 (A)

ORISSA : TOTAL (1971)

DISTRICTS	Y	X_1	X_2	X_3	X_4	X_5	X_6	X_7	X_8	X_9	X_{10}	X_{12}
SAMBALPUR	9.56	60.51	15.7	28.6	13.4	977	70.69	12.39	4.71	12.02	28.41	133.31
SUNDARGARH	6.22	55.21	8.1	55.2	15.6	942	82.73	9.0	5.09	23.25	2.4	56.71
KEONJHAR	6.51	54.14	11.3	47.6	9.9	937	86.99	9.38	5.5	7.05	2.39	40.64
MAYURBHANJ	11.6	54.8	7.2	59.1	8.0	987	83.86	9.33	5.49	2.79	0.57	73.73
BALASORE	2.6	50.67	18.5	7.1	21.0	972	91.07	13.26	5.88	5.47	10.39	44.43
CUTTACK	3.11	51.53	18.0	2.9	22.9	986	80.28	14.77	5.69	7.98	20.57	52.17
DHENKANAL	4.65	54.94	16.8	13.0	13.2	977	86.32	11.66	5.58	4.00	3.2	44.84
BOUD KHANDAMAL	11.0	59.68	18.8	41.3	6.7	1004	78.28	9.97	4.61	3.15	6.28	68.00
BOLANGIR	6.21	60.79	16.4	20.0	7.5	993	76.63	10.95	5.02	6.86	10.35	113.8
KALAHANDI	5.59	60.16	17.1	29.5	4.6	1010	89.69	9.75	4.92	4.86	3.67	55.56
KORAPUT	9.46	60.21	13.4	56.9	4.9	980	79.35	7.61	4.67	8.19	0.54	34.18
KANJAM	13.29	52.61	16.1	9.9	11.6	1042	87.8	13.00	4.94	11.33	28.84	66.25
PURI	3.59	53.99	13.7	3.8	20.5	977	78.4	12.88	5.59	9.79	22.55	50.68

Source : (i) Census of India, 1971, Series 16, Economic Tables
(ii) Census Atlas, Orissa, 1971 (iii) Statistical Abstracts, 1972, and
Economic Survey, 1976, Bureau of Statistics & Economics, Govt. of Orissa.

TABLE. 16(B)

ORISSA : RURAL (1971)

DISTRICTS	Y	x_1	x_2	x_3	x_4	x_5	x_6	x_7	x_8	x_{10}	x_{11}	x_{12}
SAMBALPUR	9.92	61.68	15.8	30.7	10.7	995	71.20	13.17	4.72	28.41	81.51	138.61
SUNDARGARH	5.93	55.29	8.10	64.3	9.8	993	86.48	10.84	5.41	2.4	73.89	58.67
KEONJHAR	6.10	54.25	11.10	48.7	8.9	988	87.94	8.73	5.59	2.39	74.96	38.64
MAYURBHANJ	11.76	55.09	7.10	60.4	7.1	991	84.13	9.39	5.49	0.57	77.80	72.70
BALASORE	2.46	50.83	19.10	7.2	18.8	979	91.91	13.43	5.90	10.39	84.88	41.04
CUTTACK	3.03	51.51	18.50	3.0	21.3	1007	81.40	15.22	5.73	20.57	66.25	47.38
DHENKANAL	4.70	55.25	16.90	13.4	12.4	986	85.63	10.18	5.58	3.2	70.61	41.36
BOUD-KHANDAMALA	10.98	59.93	18.80	42.0	5.9	1009	78.45	10.05	4.61	6.38	41.13	66.05
BOLANGIR	6.20	61.65	16.60	21.0	5.7	999	76.93	11.11	5.03	10.35	64.79	110.87
KALAHANDI	5.49	60.62	17.10	30.5	3.6	1014	90.26	9.82	4.95	3.67	59.11	54.86
KORAPUT	9.69	60.96	13.50	60.3	3.0	985	79.90	7.05	4.69	0.54	51.14	30.63
GANTAM	13.85	53.50	16.40	11.1	9.0	1054	89.08	13.69	4.92	28.84	56.84	57.82
PURI	3.44	54.43	14.1	4.0	18.1	1000	79.78	13.38	5.07	22.55	63.66	48.34

SOURCE : Same as in case of Table. 16(A)

ORISSA : URBAN (1971)

DISTRICT	Y	X_1	X_2	X_3	X_4	X_5	X_6	X_7	X_8	X_{12}
SAMBALPUR	6.64	52.57	14.80	12.50	34.50	849	67.15	7.18	4.64	94.59
SUNDARAGARH	7.26	53.37	8.20	21.20	37.50	790	71.70	4.33	4.25	50.62
KEONJHAR	12.30	52.79	13.80	32.60	23.60	839	75.25	5.42	4.58	67.16
MAYURBHANJ	5.46	45.52	11.20	9.30	42.90	843	75.46	7.93	5.41	109.77
BALASORE	5.17	48.09	7.80	5.80	33.50	848	78.04	10.78	5.59	103.09
CUTTACK	4.17	51.70	11.40	1.30	43.50	772	67.02	9.72	5.20	107.36
DHENKANAL	3.36	48.30	14.10	1.40	33.40	797	74.20	9.56	5.58	128.07
BOUD KHANDAMALA	11.74	52.45	19.90	7.40	31.60	865	72.17	7.62	4.59	128.21
BOLANGIR	6.27	49.53	13.00	5.20	32.00	923	71.24	8.71	4.97	144.69
KALAHANDI	7.70	51.41	17.20	7.80	24.50	939	78.79	8.13	4.99	69.2
KORAPUT	6.89	52.05	13.20	17.40	27.80	931	73.44	6.61	4.44	74.04
GANJAM	8.71	46.00	13.80	0.40	33.50	955	78.58	11.68	5.05	141.11
PURI	5.09	50.3	9.10	1.00	45.60	788	68.10	8.83	4.95	72.28

Source : Same as in Case of Table. 16 (A)

TABLE · 17(A)

WEST BENGAL : TOTAL (1971)

DISTRICTS	Y	X_1	X_2	X_3	X_4	X_5	X_6	X_7	X_8	X_9	X_{10}	X_{12}
DARJEELING	21.61	48.93	12.6	14.30	33.40	88.2	74.7	7.92	5.60	23.05	20.29	31.65
JALPAIGURI	10.05	49.81	34.40	24.90	30.50	88.70	90.22	9.78	5.18	9.60	18.08	25.68
COOCH BEHAR	1.69	51.37	47.10	0.80	11.90	91.60	101.26	11.51	5.57	683	4.16	28.10
W. DINAJPUR	2.77	51.21	23.0	12.10	12.40	92.10	94.75	9.66	5.52	9.34	3.64	26.66
MALDA	3.55	49.54	16.60	8.20	9.30	94.80	98.98	10.97	5.95	4.22	5.76	43.57
MURSHIDABAD	2.64	48.14	12.20	1.30	12.30	95.70	101.79	10.62	5.76	8.45	25.60	57.44
NADIA	1.97	46.39	21.20	1.40	23.60	94.80	95.23	12.34	5.75	18.74	40.97	53.01
24 PARAGNAS	1.83	47.08	23.10	1.70	27.10	88.20	81.98	10.67	5.51	35.16	9.11	35.12
HOWRAH	1.36	47.58	13.00	0.10	28.70	83.30	88.76	11.74	5.35	41.93	26.32	63.09
CALCUTTA	5.66	56.96	3.30	0.05	54.40	63.60	44.76	8.01	4.96	100.00	0.00	121.29
HOOGHLY	4.77	46.89	19.60	3.60	28.00	89.60	83.84	10.45	5.59	29.53	57.77	54.76
BURDWAN	5.12	48.15	25.20	6.00	24.80	88.60	83.20	8.93	5.35	29.39	64.91	39.56
BIRBHUM	4.40	48.18	29.90	7.10	17.40	96.80	90.28	10.66	5.61	8.28	74.35	50.30
BANKURA	7.87	47.89	28.30	10.40	14.50	95.80	85.98	11.47	5.58	7.63	37.61	50.65
MIDNAPORE	6.03	47.18	13.60	8.20	19.40	94.50	88.45	11.23	5.60	8.49	20.71	66.51
PURULIYA	9.83	52.71	15.00	19.80	8.20	97.00	76.16	9.82	5.62	8.99	24.49	39.23

Source :   (i) Census of India, Series 22, 1971, Economic Tables
(ii) Census Atlas, West Bengal, 1971
(iii) Statistical Abstracts, 1972, Bureau of Applied Economics & Statistics, Govt. of West Bengal.

TABLE · 17 (B)

WEST BENGAL : RURAL (1971)

DISTRICTS	Y	X_1	X_2	X_3	X_4	X_5	X_6	X_7	X_8	X_{10}	X_{11}	X_{12}
DARJEELING	25.88	49.26	13.8	16.4	15.9	910	77.67	8.07	5.69	20.29	35.42	20.27
JALPAIGURI	10.66	50.04	36.3	27.4	28.8	893	84.09	8.96	5.16	18.08	68.85	17.83
COOCH BEHAR	1.49	51.79	49.8	0.8	9.2	923	103.73	11.65	5.59	4.16	72.04	20.26
W.DINAJPUR	2.75	52.26	24.6	13.2	8.8	928	95.89	9.62	5.44	3.64	70.07	21.66
MALDA	3.38	49.83	17.1	8.6	7.6	951	100.02	10.99	5.95	5.76	49.65	31.99
MURSHIDABAD	2.42	48.56	12.3	1.4	10.0	958	104.06	10.62	5.78	25.6	42.93	51.81
NADIA	1.57	47.26	23.9	1.6	17.6	952	100.9	12.27	5.77	40.97	41.19	39.26
24 PARAGNAS	1.26	47.75	31.16	2.4	16.5	953	93.73	11.86	5.73	9.11	75.02	28.19
HOWRAH	0.89	44.77	18.1	0.1	20.6	941	87.34	12.38	5.50	26.32	79.19	42.45
HOOGHLY	5.15	45.9	23.8	4.6	22.3	940	94.31	11.16	5.86	57.77	68.88	50.1
BURDWAN	5.63	48.57	49.1	7.3	19.9	918	86.79	10.45	5.58	64.91	83.07	32.01
BIRBHUM	4.38	48.42	30.5	7.5	15.8	974	91.42	10.85	5.62	74.35	69.19	45.82
BANKURA	8.19	48.24	28.9	11.2	12.9	961	86.75	11.66	5.58	37.61	89.68	39.39
MIDNAPORE	5.15	47.52	14.0	8.7	17.8	952	89.66	11.47	5.63	20.71	86.74	66.14
PURULIYA	9.39	52.02	14.7	21.3	6.0	963	76.19	9.96	5.65	24.49	83.84	28.49

Source : Same as in Table · 17 (A)

WEST BENGAL URBAN - 1971.

Districts.	Y	X_1	X_2	X_3	X_4	X_5	X_6	X_7	X_8	X_{12}
Darjeeling	6.26	47.89	8.3	6.9	42.6	792	65.5	7.45	5.32	69.64
Jalpaiguri	4.04	47.66	15.4	1.1	49.5	900	75.88	9.4	5.32	104.22
Cooch Bihar	4.52	45.87	9.0	0.1	50.8	937	73.79	8.86	5.37	135.99
West Dinajpur	2.9	41.43	7.1	1.4	48.0	933	86.17	10.04	6.43	75.19
Malda	2.32	43.31	5.4	0.01	50.9	903	77.32	10.63	5.93	79.56
Murshidabad	3.04	43.68	10.3	0.3	37.2	933	75.77	10.52	5.56	118.44
Nadia	3.71	42.65	9.4	0.05	50.2	909	72.8	12.56	5.66	112.63
Twentyfour Parganas	3.05	45.92	6.0	0.03	48.6	793	63.77	8.82	5.15	47.92
Howrah	2.13	50.99	4.7	0.1	41.0	705	56.2	6.87	5.04	91.57
Calcutta	5.66	56.96	3.3	0.05	51.2	635	67.76	6.01	4.96	121.29
Hooghly	3.54	49.43	6.5	0.6	36.3	767	59.94	8.81	4.97	67.71
Burdwan	3.21	47.15	10.7	1.2	42.7	705	63.93	6.72	4.71	65.18
Birbhum	4.68	45.12	22.2	1.2	38.9	903	74.60	8.29	5.45	109.7
Bankura	3.79	43.53	20.0	0.6	34.6	920	75.99	9.1	5.63	199.18
Midnapore	3.53	43.29	8.8	1.6	40.5	905	75.11	8.61	5.20	170.98
Puruliya	4.3	44.57	18.2	1.8	34.6	909	75.86	8.4	5.25	90.78

Source : Same as in Table . 17 (A)

TABLE. 18 (A)

BIHAR : TOTAL (1981)

DISTRICT	Y	X_1	X_2	X_3	X_4	X_5	X_6	X_7	X_8	X_9	X_{10}	X_{12}
PATNA	9.02	46.09	16.94	0.13	22.93	903	80.07	14.89	6.76	28.84	80.02	18.63
GAYA	12.21	47.52	25.06	0.05	14.43	969	83.33	14.57	6.75	9.12	85.07	15.12
SAHABABAD	6.2	45.34	16.65	0.94	15.34	926	82.19	15.6	6.66	10.23	73.91	13.97
SARAN	4.93	43.52	11.41	0.59	10.65	1033	90.64	16.22	6.69	6.05	56.61	12.00
CHAMPARAN	8.51	52.52	14.12	0.64	8.82	919	79.84	12.48	6.04	5.85	36.71	12.38
MUZAFFARPUR	4.17	50.11	15.85	0.03	11.95	962	87.67	15.31	6.0	6.75	33.74	13.49
DARBHANGA	5.45	49.58	15.08	0.015	11.54	978	79.69	14.11	5.72	5.57	18.46	14.15
MONGHYER	9.1	48.18	15.62	1.32	14.18	929	82.28	14.41	5.97	13.01	42.01	12.76
BHAGALPUR	9.16	48.26	11.18	3.59	15.8	911	83.66	14.22	6.01	11.72	45.33	20.73
SAHARSA	15.06	52.42	16.36	0.4	9.1	930	79.71	14.92	5.99	5.72	33.42	11.92
PURNEA	11.19	54.84	11.47	4.08	9.94	926	84.55	11.92	5.58	8.39	13.81	15.55
S.PARAGANAS	12.04	53.12	8.42	37.27	10.5	957	75.86	10.02	5.62	6.89	8.86	37.44
PALAMAU	13,42	50.46	25.17	18.58	8.4	957	88.49	12.9	6.03	5.64	27.32	11.88
HAZARIBAGH	7.69	47.9	16.67	10.82	10.51	967	83.18	10.12	5.99	17.93	8.04	24.9
RANCHI	16.7	51.67	5.14	57.89	19.6	963	75.39	10.4	5.53	20.99	4.76	19.26
DHANBAD	5.0	47.03	15.81	9.85	23.2	814	70.72	6.45	5.19	50.62	1.35	19.34
SINGHBHUM	14.43	49.94	4.82	45.59	21.5	942	68.91	8.78	5.2	32.07	3.91	15.57

Source : 1. Census of India, 1981, Series 4 (i) Economic Tables
(ii) Primary Census Abstract
2. Bihar through figures. 1981, Directorate of Statistics & Evaluation.

TABLE . 18(B)

BIHAR : RURAL (1981)

	FWPR	MWPR	% SC	% ST	LITERARY RATIO	SEX RATIO	YOUTH DEP RATIO	OLD DEP RATIO	AVERAGE Size of Household	%ag. OF AREA under Irrigation	% OF AREA under Rice	No. of enterprises
Patna	10.71	47.39	19.31	0.06	15.19	92.9	83.19	16.61	6.77	82.02	43.78	10.12
Gaya	12.97	48.08	26.08	0.05	12.14	978	83.93	14.97	6.73	85.07	54.55	12.34
Sahabad	6.59	45.76	17.43	0.96	13.1	935	83.0	16.08	7.12	73.91	47.27	10.29
Saran	5.07	43.58	11.55	0.58	9.48	1042	91.28	16.42	6.67	56.61	35.08	9.96
Champaran	9.78	52.99	14.51	0.67	7.26	924	80.05	12.67	6.03	36.71	52.72	10.04
Muzaffarpur	9.24	50.63	16.16	0.027	10.23	971	80.79	15.62	5.95	23.74	47.65	10.73
Durbhanga	5.56	50.04	15.27	0.012	10.24	984	80.11	14.33	5.67	18.46	46.7	11.45
Munger	9.85	49.12	16.33	1.41	11.89	937	67.3	13.59	5.89	32.01	28.08	8.77
Bhogalpur	9.87	49.15	11.58	4.02	12.8	919	84.78	14.67	590	45.33	40.51	17.96
Saharsa	15.53	52.85	16.65	0.42	8.0	938	80.52	15.26	5.99	33.42	38.14	10.53
Purnia	11.77	55.5	11.59	4.28	7.85	936	85.9	13.19	5.56	13.81	49.76	12.23
S Pargana	12.62	53.92	8.35	39.58	8.3	906	76.36	10.16	5.58	8.86	71.16	20.25
Parmar	13.93	50.93	25.88	19.35	7.4	964	89.35	13.1	6.01	27.32	57.45	9.85
Hazaribagh	8.27	48.35	17.21	11.52	6.47	1001	85.00	10.83	6.06	8.04	58.76	11.33
Ranchi	19.34	54.13	5.23	65.95	12.4	999	76.9	11.41	5.44	4.76	62.18	16.33
Dhanbad	5.95	46.98	17.26	14.99	9.6	893	75.1	8.33	5.59	1.35	78.95	13.54
Singhbhum	18.57	53.64	4.44	60.52	9.5	991	70.26	9.63	5.05	3.91	38.16	12.58

Source : Same as in Table. 18 (A)

TABLE · 18 (c)

BIHAR URBAN - 1981

DISTRICT	FWPR	MWPR	% SC	% ST	LITERARY RATIO	SEX RATIO	YOUNG DEP RATIO	OLD DEP RATIO	AVERAGE SIZE OF HOUSEHOLD	No. OF ESTABLISH-MENTS PER N THOUSAND POP.
Patna	4.62	43.04	10.77	0.31	43.08	840	72.98	10.95	6.75	39.64
Gaya	4.18	42.23	14.28	0.07	38.42	804	77.42	10.48	6.90	42.76
Sahabad	5.36	41.85	9.53	0.66	35.9	854	75.53	11.61	6.67	46.25
Saran	2.66	42.72	8.99	0.74	30.46	885	31.2	13.41	7.06	43.74
Champaran	3.83	45.25	7.52	0.17	35.23	840	76.68	9.53	6.33	49.64
Muzaffarpur	3.17	43.97	11.07	0.08	38.15	839	71.11	11.05	6.81	53.29
Darbhanga	5.53	41.84	11.5	0.07	36.7	865	72.56	10.29	6.64	63.14
Munghyar	3.91	42.06	10.71	0.72	33.84	877	76.06	11.42	6.52	39.41
Bhagalpur	3.59	42.02	7.98	0.25	39.3	848	75.77	11.03	6.95	41.61
Saharsa	6.86	45.82	11.11	0.13	28.7	813	67.62	9.77	6.15	34.84
Purnia	4.4	48.13	10.15	1.76	34.61	817	71.14	9.32	5.9	51.48
S. Paraganas	3.69	42.94	9.4	3.86	42.8	846	69.41	8.93	6.28	46.04
Palaman	4.11	43.09	12.38	4.63	30.0	837	75.41	9.89	6.42	45.82
Hazari Bagh	3.87	45.57	13.08	6.28	36.94	793	73.42	6.34	5.57	35.55
Ranchi	6.46	43.12	4.74	24.55	49.5	754	76.35	7.45	5.90	30.33
Bhanbad	3.98	47.07	14.23	4.31	37.9	742	66.72	4.13	4.85	25.0
Singhbum	4.89	42.66	5.68	11.19	49.0	845	06.17	7.02	5.53	21.89

Source :   Same as in Table·18 (A)

TABLE . 19 (A)

ORISSA : TOTAL (1981)

DISTRICT	Y	x_1	x_2	x_3	x_4	x_5	x_6	x_7	x_8	x_9	x_{10}	x_{12}
SUMBALPUR	14.27	57.9	15.5	27.6	19.5	971	68.03	12.97	4.74	15.49	10.83	37.67
SUNDARGARH	10.22	53.08	8.6	53.1	24.2	931	32.54	8.71	5.08	30.6	12.46	28.54
KEONJHAR	11.2	53.25	11.2	45.5	17.2	983	72.65	9.25	5.33	11.34	10.80	23.55
MAYURBHANJ	20.81	55.51	6.6	58.3	13.9	989	69.32	9.3	5.21	5.72	15.12	26.04
BALASORE	3.78	50.1	17.9	6.9	28.5	977	63.84	10.02	6.07	8.25	33.1	27.84
CUTTACK	4.0	50.65	17.7	3.1	32.4	972	72.71	14.73	5.88	10.78	60.26	33.45
DHENKANAL	8.09	53.98	15.9	12.5	21.5	958	77.91	11.45	5.57	7.82	7.37	27.12
BOND KHONDHMALA	18.29	59.45	18.5	39.7	11.4	999	70.06	9.85	4.58	5.26	18.61	32.11
BOLANGIR	10.73	58.87	20.5	19.5	11.3	992	72.39	12.51	4.91	9.13	28.97	30.74
KALAHANDI	11.85	60.29	15.7	31.6	7.7	1010	70.04	10.24	4.78	6.01	9.47	24.46
KORNPUT	17.35	60.2	14.0	55.9	8.6	993	70.96	8.21	4.64	11.31	9.29	22.69
GANJAM	18.68	51.88	15.7	9.8	17.1	1001	78.58	12.89	5.07	14.25	56.87	35.37
PURI	4.56	52.74	13.1	3.5	31.2	960	71.64	13.12	5.74	14.79	72.33	37.0

Source : (i) Census of India, 1981, Series 16, Economic Tables (Unpublished)
(ii) Statistical Abstract, 1981
(iii) Economic Survey, 1983-84, Bureau of Statistics & Economics, Govt. of Orissa

TABLE · 19 (B)

ORISSA : RURAL (1981)

DISTRICT	Y	X_1	X_2	X_3	X_4	X_5	X_6	X_7	X_8	X_{10}	X_{11}	X_{12}
SUMBALPUR	14.27	57.9	15.3	30.1	16.5	991	68.36	13.96	4.74	40.83	66.19	35.16
SUNDARGARH	11.71	55.13	8.3	65.1	15.4	988	73.54	10.72	5.26	12.46	56.77	22.49
KEONJHAR	11.3	53.76	9.6	47.5	15.3	999	73.45	9.65	5.41	10.89	57.3	23.52
MAYURBHANJ	12.44	56.03	6.3	60.5	12.1	998	69.69	9.38	5.21	15.12	65.95	24.19
BALASORE	3.64	50.3	18.6	7.0	27.5	986	81.18	12.75	6.11	33.10	66.56	24.92
CUTTACK	3.87	50.6	18.3	3.2	30.65	906	74.08	15.4	6.0	60.26	46.2	29.66
DHENKANAL	8.17	44.07	16.1	12.9	19.9	9.75	79.17	11.85	5.62	17.37	44.63	24.64
BOND KHONDHMALA	18.76	60.1	18.5	41.3	9.8	1006	70.52	10.0	4.57	18.61	28.04	30.07
BOLANGIR	11.02	59.92	20.9	20.9	9.0	999	72.82	12.78	4.89	28.93	53.4	27.51
KALAHANDI	12.06	60.97	15.7	33.0	6.2	10.5	78.28	10.34	4.77	9.47	35.3	22.84
KORNPUT	18.18	61.28	13.8	60.7	5.3	1001	71.23	8.46	4.64	9.29	33.55	19.25
GANJAM	19.51	52.96	15.6	11.0	13.4	1045	79.93	13.19	5.04	56.87	37.23	30.37
PURI	4.32	53.5	13.8	3.8	27.7	987	73.26	14.03	5.85	72.33	49.16	33.33

Source :   Same as in Table. 19 (A)

TABLE . 19(c)

ORISSA : URBAN (1981)

DISTRICTS	Y	X_1	X_2	X_3	X_4	X_5	X_6	X_7	X_8	X_{12}
SAMBALPUR	8.97	50.26	16.7	13.0	37.3	879	66.31	7.76	4.75	51.38
SUNDARGARH	6.49	48.88	9.4	21.0	46.2	814	70.38	4.37	4.7	42.28
KEONGHAR	10.34	49.51	14.7	28.4	33.3	867	66.77	6.29	4.8	41.44
MAYARBHANJ	9.66	47.56	11.1	19.0	46.3	850	63.45	8.1	5.36	56.64
BALASORE	5.4	47.95	9.5	5.4	37.5	883	70.42	10.91	5.65	60.28
CUTTACK	5.29	51.02	11.4	2.1	49.4	789	61.85	9.38	5.23	66.47
DHEMKANAL	7.07	53.05	13.5	7.1	43.4	777	60.09	7.09	5.02	56.31
BOND-KHENDMAL	9.17	48.51	18.3	9.4	42.8	872	62.19	7.36	4.64	68.67
BOLAMGIR	7.74	48.8	13.5	5.1	35.0	930	68.25	9.91	5.14	62.86
VALAHANDI	8.41	50.3	15.9	8.3	31.3	936	74.37	8.84	5.03	49.65
KARAPUT	10.55	52.03	15.6	29.3	35.1	932	68.93	6.33	4.61	49.61
GAUFAM	9.41	45.72	12.7	0.5	40.3	953	70.92	11.16	5.22	65.18
PURI	6.09	48.75	8.8	1.9	53.4	819	63.1	8.28	5.10	58.15

Source :   Same as in Table. 19.(A)

TABLE · 20 (A)

WEST BENGAL : TOTAL (1981)

DISTRICT	Y	X_1	X_2	X_3	X_4	X_5	X_6	X_7	X_8	X_9
DARJEELING	19.64	48.66	14.4	15.2	31.85	888	63.32	8.29	5.34	27.55
JALPAIGURI	11.1	50.53	34.8	22.6	20.1	910	72.64	8.92	5.37	14.05
COOCHBIHAM	3.36	42.96	49.9	0.61	19.4	935	80.57	10.71	5.36	6.9
WEST DINAJPUR	5.58	52.6	28.5	10.9	17.2	937	78.59	9.21	5.5	11.17
MALDA	5.81	47.65	16.9	7.9	14.2	949	81.47	9.89	5.85	4.78
MURSHIDABAD	4.45	48.81	13.0	1.2	17.7	959	82.74	10.04	5.81	9.36
NADIA	3.23	48.94	25.2	1.9	29.3	946	77.26	11.96	5.93	21.59
24 PARAGANAS	2.79	47.26	25.1	1.8	35.5	903	69.5	10.66	5.61	38.82
HAWARAH	1.98	47.36	15.7	0.02	40.6	873	66.35	10.09	5.55	45.12
CALCUTTA	6.17	55.31	4.2	0.10	63.0	712	38.88	9.01	5.45	100.00
HOOGHLY	6.13	49.07	22.1	4.1	38.1	909	65.44	9.8	5.69	29.53
BURDWAN	6.24	47.91	25.7	5.9	32.6	897	66.01	8.1	5.23	29.39
BISHBUM	5.54	49.83	29.7	7.0	24.5	962	71.05	8.18	5.59	8.28
BANKURA	10.7	46.93	29.0	10.7	24.4	964	69.66	10.25	5.79	7.63
MIDNAPURE	6.53	46.02	14.6	8.1	29.2	951	76.27	11.16	5.78	8.49
PUNALIYA	13.76	47.71	18.6	18.9	13.3	957	70.65	10.11	5.58	9.0

Source : (i) Census of India, 1981, series· 22, Economic Tables (Unpublished)
(ii) Economic Review, 1982-83, Bureau of Applied Economics & Statistics, Govt· of West Bengal.

Districts.	Y	X_1	X_2	X_3	X_4	X_5	X_6	X_7	X_8
Darjeeling	24.28	48.73	16.2	19.9	22.98	911	68.0	8.51	5.37
Jalpaiguri	12.15	50.97	37.3	26.0	15.1	914	74.61	8.86	5.30
Cooch Bihar	3.1	53.59	52.6	0.6	16.5	936	82.56	10.73	5.34
West Dinajpur	5.69	53.75	30.5	12.0	12.5	942	81.25	9.16	5.44
Malda	5.84	47.89	17.3	8.3	12.2	950	82.62	9.89	5.85
Murshidabad	3.95	49.29	12.9	1.3	15.4	958	84.37	10.03	5.83
Nadia	2.48	49.77	27.8	2.2	22.9	944	82.79	11.80	6.0
Twenty Four Parganas	2.07	47.7	33.7	2.7	22.9	941	77.59	5.17	5.82
Howrah	1.51	44.72	21.1	0.02	31.9	951	79.44	11.72	6.06
Hooghly	7.06	49.54	26.7	5.5	32.1	942	73.47	10.21	6.0
Burdwan	7.29	49.29	29.9	7.4	27.7	934	71.65	8.89	5.37
Birbhum	5.58	50.27	30.3	7.5	22.9	966	71.92	8.22	5.60
Bankura	11.09	47.09	29.5	11.5	22.4	966	70.96	10.35	5.79
Midnapore	6.73	46.25	14.9	8.7	27.4	956	78.07	11.44	5.8
Puruliya	14.71	48.07	18.5	20.8	10.5	962	71.2	10.29	5.56

Source :   Same as in Table. 20 (A)

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Districts	Y	X_1	X_2	X_3	$X_4°$	X_5	X_6	X_7	X_8
Darjeeling	6.8	48.47	9.4	5.0	56.4	830	52.17	7.76	5.28
Jalpaiguri	4.58	47.91	19.2	1.6	52.2	885	61.41	9.24	5.37
Cooch Bihar	6.95	44.5	13.0	0.03	59.1	927	57.27	10.39	5.61
West Dinajpur	4.67	43.71	12.7	2.0	55.2	901	59.8	9.59	6.07
Malda	5.15	43.89	9.5	0.02	55.3	927	61.15	9.97	5.82
Murshidabad	9.25	44.08	13.3	0.02	40.7	968	58.2	10.13	5.63
Nadia	5.95	45.89	15.9	0.08	52.3	954	59.49	12.46	5.67
Twenty Four Parganas	3.98	45.6	10.7	0.04	56.6	847	52.75	9.71	5.3
Howrah	2.61	50.3	9.4	0.03	52.6	787	52.92	8.43	5.04
Calcutta	6.17	55.21	4.2	0.1	63.2	712	38.86	9.01	5.45
Hooghly	3.76	48.07	10.3	0.06	51.3	833	48.97	8.95	5.08
Burdwan	3.52	44.8	14.8	2.3	45.3	815	57.49	6.85	4.92
Birbhum	5.08	45.15	22.9	1.8	41.7	920	57.84	7.27	5.42
Bankura	5.95	45.04	22.8	1.8	46.5	943	55.32	9.10	5.8
Midnapore	4.21	43.7	11.7	1.9	49.4	902	59.13	8.48	5.58
Puruliya	3.85	44.11	20.4	1.9	42.3	905	55.37	8.36	5.76

Source : Same as in Table. 20 (A)

TABLE · 21

VALUE OF $\overline{R}^2$.

	BIHAR		ORISSA		WEST BENGAL	
	1971	1981	1971	1981	1971	1981
T	0.4348	0.6162	0.996	0.358	0.731	0.603
R	0.7003	0.748	0.785	0.716	0.885	0.681
U	0.3398	0.046	0.969	0.669	0.606	0.677

ZERO-ORDER CORRELATION BETWEEN EACH INDEPENDENT FACTOR AND FEMALE WORK FORCE PARTICIPATION RATE

1971

Total

	FWPR	X_1	X_2	X_3	X_4	X_5	X_6	X_7	X_8	X_9	X_{10}	X_{12}
BIHAR		0.11	-.04	0.33	0.09	-.15	0.16	-.14	0.003	0.02	0.16	0.02
ORISSA		0.34	-0.25	0.49	-0.61*	0.52	-0.19	-0.38	-0.67*	-0.02	0.07	0.33
WEST BENGAL		0.25	-0.18	0.63**	0.24	0.22	-0.38	-0.63**	-0.10	-0.03	-0.01	-0.18

Rural

	X_1	X_2	X_3	X_4	X_5	X_6	X_7	X_8	X_{10}	X_{11}	X_{12}
BIHAR	0.19	-0.13	0.40	0.02	-0.22	0.11	-0.14	-0.11	0.16	-0.3	0.04
ORISSA	0.36	-0.24	0.44	-0.62*	0.49	-0.22	-0.27	-0.70**	0.10	-0.34	0.32
WEST BENGAL	0.18	-0.26	0.63**	0.13	-0.39	-0.71**	-0.78**	-0.16	0.004	-0.28	-0.35

Urban

	X_1	X_2	X_3	X_4	X_5	X_6	X_7	X_8	X_{12}
BIHAR	0.59*	.004	0.35	0.002	-0.49*	-0.29	-0.58*	-0.49	-0.55
ORISSA	0.38	0.54	0.58*	-0.23	0.33	0.10	-0.26	-0.41	0.01
WEST BENGAL	0.24	0.12	0.48	0.19	0.003	-0.17	0.002	-0.02	0.24

Critical value of 'r'	5%	1%
BIHAR	0.48	0.61
ORISSA	0.55	0.68
WEST BENGAL	0.49	0.62

* for significance in 5 percent level

** for significance in 1 percent level.

Total	FWPR	X_1	X_2	X_3	X_4	X_5	X_6	X_7	X_8	X_9	X_{10}	X_{12}
BIHAR		0.55*	-0.19	0.64**	0.03	0.07	-0.32	-0.24	-0.25	-0.04	-0.18	0.18
ORISSA		0.55*	-0.29	0.65*	-0.76**	0.52	0.11	-0.39	-0.77**	-0.15	-0.39	-0.15
WEST BENGAL		-0.12	-0.15	0.79**	-0.17	0.02	-0.20	-0.42	-0.31	-0.13		

Rural	X_1	X_2	X_3	X_4	X_5	X_6	X_7	X_8	X_{10}	X_{11}	X_{12}
BIHAR	0.64**	-0.30	0.71**	-0.01	0.10	-0.40	-0.32	-0.41	-0.21	0.20	0.31
ORISSA	0.57*	-0.35	0.65*	-0.79**	0.56*	-0.41	-0.60*	-0.79**	-0.41	-0.26	-0.15
WEST BENGAL	0.15	-0.28	0.82**	-0.16	0.06	-0.73**	-0.13	-0.50*			

Urban	X_1	X_2	X_3	X_4	X_5	X_6	X_7	X_8	X_{12}
BIHAR	0.02	-0.22	0.41	0.17	0.05	-0.30	-0.23	-0.23	-0.20
ORISSA	-0.07	0.67*	0.6	-0.52	0.56*	0.15	-0.24	-0.51	-0.28
WEST BENGAL	-0.07	-0.08	0.03	-0.9	0.4	-0.13	0.4	0.38	

Critical value of 'r'	5%	1%	
BIHAR	0.48	0.61	* for signifigance in 5 percent level.
ORISSA	0.55	0.68	** for signifigance in 1 percent level.
WEST BENGAL	0.49	0.62	

BLE - :

TOTAL

	FWFP	Constant	MWFP X_1	% of S.C X_2	% of S.T X_3	Young dependency X_4	Average size of household. X_5	Sex ratio X_6	Literacy rate X_7	Urbanisation	Old dependency	% of area Irrigation	Industrial Units.	R^2	F	$\bar{R}^2$
										−0.301	−0.291	0.017	−0.17	0.823	2.1191	0.4348
Regression Equation.1	Y =	121.46*	−0.557	0.158	−0.209*	0.007	0.381	−0.693*	−0.012							

Rural

	FWFP	Constant	MWFP X_1	% of S.C X_2	% of S.T X_3	Literacy rate X_4	Sex ratio X_5	Young dependency X_6	Old dependency X_7	Average size of household. X_8	Irrigation X_{10}	% of area under rice X_{11}	Industrial Units. X_{12}	R^2	F	$\bar{R}^2$
										−0.901	0.137*	−0.127*	−0.226*	0.887	3.599	0.641
Regression Equation.1	Y =	1.986	0.127	0.022	0.175*	0.198	0.073	0.216*	−1.017							
										−1.112	0.132*	−0.12*	−0.218**	0.887	4.739*	0.7003
Regression Equation.2	Y =	16.869	−	−0.031	0.178**	0.034	−0.00	0.211*	−0.066							

Urban

	FWFP	Constant	MWFP X_1	% of S.C X_2	% of S.T X_3	Literacy rate X_4	Sex ratio X_5	Young dependency X_6	Old dependency X_7	Average size of household X_8	Industrial Units. X_{12}	R^2	F	$\bar{R}^2$
										1.971*	−0.017	0.7068	1.8751	0.3398
Regression Equation.1	Y =	−2.77	0.317	0.137	0.172	−0.038	0.066	0.013	−0.271					

* for significance at .05 level

** for significance at .01 level

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TABLE. 25

REGRESSION CHART TOTAL, RURAL, URBAN   ORISSA - 1971.

Total	FWPR	Constant	MWPR X_1	% of S.C. X_2	% of S.T. X_3	Literacy rate X_4	Sex ratio X_5	Young dependency X_6	Old dependency X_7	Average Size. X_8	Urbanisation X_9	Irrigation X_{10}	No. of Industries X_{12}	R^2	F
Regression.1	Y	199.90	-1.614	-0.798	-0.11	0.123	0.001	0.0037	0.45	-17.816	-0.6	-0.0096	0.057	0.82	1.911
Regression.2	Y	203.99**	-1.329**	-0.549**	-	-0.599*	-0.51*	-0.0104	0.502	-13.93**	-0.419	0.036	0.022	0.99	301.00**

Rural	FWPR	Constant	MWPR X_1	% of S.C. X_2	% of S.T. X_3	Literacy rate X_4	Sex ratio X_5	Young dependency X_6	Old dependency X_7	Average size X_8	Irrigation X_{10}	Rice X_{11}	No. of Industries X_{12}	R^2	F
Regression.1	Y	172.478	-1.694	-0.077	-	0.113	-0.15	0.172	-0.721	-7.674	0.267	-0.152	0.153	0.939	2.6329
Regression.2	Y	167.757**	-1.438**	-0.212	-0.032	-0.756	-	-0.362	0.356	-7.736	-	-	-	0.911	3.27*

Urban	FWPR	Constant	MWPR X_1	% of S.C. X_2	% of S.T. X_3	Literacy rate X_4	Sex ratio X_5	Young dependency X_6	Old dependency X_7	Average size of X_8	No. of Industries. X_{12}	R^2	F
Regression.1	Y	-188.90	1.465*	0.423*	0.446*	0.559*	0.187	0.863**	0.455**	0.393	0.393*	0.97	10.815**
Regression.2	Y	-150.037**	0.028**	0.5**	0.392**	0.413**	-	0.767**	0.694**	-2.669**	0.639**	0.99	48.572**

REGRESSION CHART. TOTAL, RURAL, URBAN   WEST BENGAL – 1971.

Total	FWFP	Constant	MWFP X_1	% of S.C. X_2	% of S.T. X_3	Literacy rate X_4	Sex ratio X_5	Young dependency X_6	Old dependency X_7	Av. size of household. X_8	Urbani- sation. X_9	Irri- gation X_{10}	Industrial Units. X_{12}	Value of R^2	Value of F	$\bar{R}^2$
Regression Equation.1	Y =	78.217	−0.178	−0.271	0.121	0.342	−0.672	−0.426	−0.191	8.129	0.073	0.058	−0.001	0.913	3.9445	0.6759
Regression Equation.2	Y =	16.551	−0.226	−0.243	0.262	0.592*	–	−0.28	−0.92	6.235	0.24	0.025	−0.045	0.924	4.7487*	0.714
Regression Equation.3	Y =	50.39	−0.164	−0.232	–	0.434*	–	0.391**	−1.008	2.358	−0.374**	−0.006	−0.058	0.892	5.5233*	.731

Rural	FWFP	Constant	MWFP X_1	% of S.C. X_2	% of S.T. X_3	Literacy rate X_4	Sex ratio X_5	Young dependency X_6	Old dependency X_7	Average Sz. of house- hold. X_8	Irrigation ratio. X_{10}	% of area under rice X_{11}	Industrial Units. X_{12}	R^2	F	$\bar{R}^2$
Regression Equation.1	Y =	424.139*	−0.582	0.539*	0.341	−1.189	−2.018	−0.816*	−1.464	−2.739*	0.004	−0.286*	0.383	0.971	9.0322	0.863
Regression Equation.2	Y =	417.12*	−0.535	0.539*	0.329	−1.166*	−1.959*	−0.819**	−1.541	−2.518	–	−0.285*	0.381*	0.957	11.7771*	0.885

Urban	FWFP	Constant	MWFP X_1	% of S.C. X_2	% of S.T. X_3	Literacy rate X_4	Sex ratio X_5	Young dependency X_6	Old dependency X_7	Average size of household. X_8	Industrial Units. X_{12}		R^2	F	$\bar{R}^2$
Regression Equation.1	Y =	−55.72*	0.581*	−0.071	0.242	0.095	0.___*	−1.___	−0.581	0.___	0.002		0.933	3.___*	.___
Regression Equation.2	Y =	−57.98**	0.607*	−0.067	0.229	0.094	0.295**	−0.034	−0.593	0.921	–		0.816	3.8061*	0.606

TABLE · 27

REGRESSION CHART, TOTAL, RURAL, URBAN   BIHAR – 1981.

Total	FWFP	Constant	MWFP X_1	% of S.C. X_2	% of S.T. X_3	Literacy rate X_4	Sex ratio X_5	Young dependency X_6	Old dependency X_7	Average size of household X_8	Urbani-sation X_9	Irri-gation X_{10}	X_{12}	R^2	F	$\bar{R}^2$
Regression equation 1	Y =	-19.257	0.736	0.212	0.19	-0.272	0.818	-0.415	0.601	1.579	0.006	0.038	-0.138	0.854	2.6643	0.4336
Regression equation 2	Y =	-8.946	0.585	0.277*	0.176*	-0.115	0.074	-0.368	0.555	-	-	0.041	-	0.808	4.2118*	0.6162

Rural	FWFP	Constant	MWFP X_1	% of S.C. X_2	% of S.T. X_3	Literacy rate X_4	Sex ratio X_5	Young dependency X_6	Old dependency X_7	Average size of household X_8	Irri-gation X_{10}	Area under rice X_{11}	X_{12}	R^2	F	$\bar{R}^2$
Regression equation 1	Y =	41.384	0.197	0.24*	0.247**	0.222	-0.855*	0.358*	-0.031	2.935	-0.131	-0.356*	0.535	0.921	5.3245*	0.768

Urban	FWFP	Constant	MWFP X_1	% of S.C. X_2	% of S.T. X_3	Literacy rate X_4	Sex ratio X_5	Young dependency X_6	Old dependency X_7	Average size of household X_{10}	X_{12}	R^2	F	$\bar{R}^2$
Regression equation 1	Y =	35.835	-0.254	0.016	0.071	-0.005	-0.142	-0.071	0.469	-1.5	0.035	0.317	0.3616	-0.5602
Regression equation 2	Y =	4.101**	-	-	0.074	-	-	-	-	-	0.001	0.1659	1.3925	0.0467

REGRESSION CHART - TOTAL, RURAL, URBAN WEST BENGAL - 1981.

TOTAL	FWFP	Constant	MWFP X_1	% of S.C. X_2	% of S.T. X_3	Literacy rate X_4	Sex ratio X_5	Young dependency X_6	Old dependency X_7	Average size of household X_8	Urbani- sation. X_9	R^2	F	$\bar{R}^2$
Regression Equation.1	Y =	98.77	0.157	-0.230	0.272	-0.092	-0.196	-0.93	1.2	-0.00	-0.208	0.010	0.010	0.147
Regression Equation.2	Y =	93.25	-0.019	-0.099	0.33	-0.042	-0.172	-0.613	-	-	-0.364	0.780	4.2*	0.053

Rural	FWFP	Constant	MWFP X_1	% of S.C. X_2	% of S.T. X_3	Literacy rate X_4	Sex ratio X_5	Young dependency X_6	Old dependency X_7	Average size of household X		R^2	F	$\bar{R}^2$
Regression Equation.1	Y =	91.87*	-0.006	-0.17	0.184	-0.096	0.049	-0.649	0.317	-6.60		0.803	4.731*	0.47

	FWFP	Constant	MWFP X_1	% of S.C. X_2	% of S.T. X_3	Literacy rate X_4	Sex ratio X_5	Young dependency X_6	Old dependency X_7	Average size of household X		R^2	F	$\bar{R}^2$
Regression Equation. 1	Y =	-117.79**	1.173**	-0.336**	0.088	0.023	0.791**	-0.012	-0.971	2.12		0.808	3.8099	0.50
Regression Equation.2	Y =	-119.83**	1.191**	-0.334*	0.79	0.051	0.794**	-	0.967*	2.170*		0.8576	5.4889*	0.4760

REGRESSION CHART - TOTAL, RURAL, URBAN WEST BENGAL - 1981.

TOTAL	FWFP	Constant	MWFP X_1	% of S.C. X_2	% of S.T. X_3	Literacy rate X_4	Sex ratio X_5	Young dependency X_6	Old dependency X_7	Average size of household X_8	Urbani- zation X_9	R^2	F	$\bar{R}^2$
Regression Equation.1	Y =	98.77	0.104	-0.200	0.272	-0.030	-0.16	-0.103	1.0	-0.30	-0.209	0.710	0.100	0.147
Regression Equation.2	Y =	93.25	-0.019	-0.039	0.32	-0.040	-0.079	-0.413	–	–	-0.064	0.788	0.202*	0.003

Rural	FWFP	Constant	MWFP X_1	% of S.C. X_2	% of S.T. X_3	Literacy rate X_4	Sex ratio X_5	Young dependency X_6	Old dependency X_7	Average size of household X_8		R^2	F	$\bar{R}^2$
Regression Equation.1	Y =	91.87*	-0.006	-0.17	0.184	-0.096	0.040	-0.649	0.317	-6.46		0.803	0.731*	0.007

Urban	FWFP	Constant	MWFP X_1	% of S.C. X_2	% of S.T. X_3	Literacy rate X_4	Sex ratio X_5	Young dependency X_6	Old dependency X_7	Average size of household X_8		R^2	F	$\bar{R}^2$
Regression Equation. 1	Y =	-117.79**	1.173**	-0.336**	0.088	0.023	0.791**	-0.012	-0.971	2.120		0.800	3.0089	0.162
Regression Equation. 2	Y =	-119.83**	1.181**	-0.137*	0.79	0.051	0.794**	–	0.997*	2.120*		0.8176	3.4085*	0.5008

C H A P T E R - VI

FINDINGS AND CONCLUSION

FINDINGS AND CONCLUSION:

The main purpose of this study, first of all was to show the pattern of female work force participation in eastern India, secondly to investigate those factors that might have affected, either positively or negatively, the females, in workforce and lastly the variation that existed in the FWPR at distict level.

"Women's social and economic roles are highly interdependent, and each influences the other. For women's increased labour force paritipation outside the home have not taken place in a vaccum. A millenia- long social equilibrium characteristics of most societies have traditionally designated the family as the central focus of the women's life. Even as women have entered the labour market, their family responsibilities have continued. And it has proved most difficult for them to assume full and equal roles in the work of world as long as their home roles have remained so unequal. It is not surprising then that women's growing presence outside the home raises very basic questions about the structure of society, about organsiation of work social services and about the roles in the family." (OECD, 1975:107) Keeping these lines as a base

the study made an attempt to achieve the above cited objectives.

In the first part of the study a clear picture of the eastern Indian female worker's participation pattern was shown, where the general participation rates (FWPR) along with the sex composition of workers and the participation rates of the working age group females were explained. While showing the pattern of female workforce participation, an analysis was also made on the basis of rural urban and male-female differentials. Sectoral distribution of female workers was shown and an attempt was made to show the sectoral shifts of female workers at the district level over the 1971-81 decade. In order to give a clear picture of the structural changes, the eastern region district were divided into two broad categories of developing and declining districts and further into six-sub categories.

Above analysis indicated that there existed large scale variations in the female workforce parti- cipation rates among the states as well as among the districts. Further, this study clearly brought out the rural-urban differential in the female workforce participation, it being high in rural area, with some exceptional cases. As regards male-female consideration of work force participation rates, male participation was found to be much higher than female participation. It was also observed that the sectoral

shift of female workers of this region from primary sector to secondary and tertiary sector corresponded to the basic feature of economic development, with the exception of Orissa, where all the districts except Mayurbhanj, showed diversion from the general pattern. From the sectorwise distribution of female workers it was found that the participation of female workers in the agricultural sector was the maximum in comparison to other two sectors, while the concentration in this case was highest in case of Bihar, it was some what less in case of West Bengal. When the rural-urban differential in this respect was studied it was found that the pattern corresponded to the general pattern of high agricultural activites in the rural area and less concentration in this sector, in urban areas.

Looking into the differences that existed in the female workforce participation among the districts in the second part of the chapter an attempt was made to find out the degree of variations in FWPR that existed in the these states. Also the degree of variations in the three economic sector was found out. From the analysis it was observed that the variation was maximum in case of West Bengal in comparison to the other two states. This variation was due to the variation in the socio-economic development reflected in the female

workforce participation rate. In this part of the study there was also a general discussion on the factors that might have caused this variation in FWPR. In 1981 ,however the degree of variation decreased, for which one can say that, the disparities of distribution of the effects of this factors were gradually declined and the gap among the districts in case of socio-economic development level was gradually narrowing down.

- In the last part of the study an attempt was made to findout the effect of various social, economic and demographic factors on the FWPR. The factors chosen for this study were as follows : male workforce participation rate, percentage of scheduled female population, literacy rates, sex ratio , dependency ratio both young and old, degree of urbanisation, average size of the household, irrigation, cropping pattern, and number of industries. Firstly the effect of these factors were examined in a three tire basis dividing the analysis into three cases of rural, urban and total for both the time period. It was found from the analysis that while some of these factors like SC and ST population, male workforce

participation, literacy and urbanisation had affected
the FWPR markedly, the other factors either affected
if moderately or the effect was negligible.
Again it was found that the degree of influence of these
factors on FWPR were different for different states and
also different for rural and urban areas. Secondly
the zero order correlation of each factor was calculated
to show the relationship of each of these factors with the
FWPR. From the analysis of these correlations it was
found that the relationship of these factors with FWPR
varies from case to case. In same caseswhile a variable
has shown significant relationship, in some other, it,
has a insginificant relation. While some cases there is
positive relationship /some other case the relationship
was negative.

Thirdly the cambined effect of a number of factors
on the FWPR was shown through the regression equations.
Through the $\bar{R}^2$ values of each equation , it was explained
that howfr these combination of factors explained the
variation in the FWPR. It was found that the chosen
independent variables best explains the variation of FWPR
in case of Orissa, which was very low in case of Bihar.

from this one can say, the cases where the $\bar{R}^2$
values are low, there might be some other factor$S$
which could have explained better the variation in FWPR
But however the analysis could not substantially establish
the effects of some of the economic factors. Because
of the limitation of the study we could not taken into
consideration some of the basic economic indicators,
This study was only limited to the overall female work
force participation. The sturdy of the factor affecting
fimale workers could be a better explanatory one if this
female workers will be studied by separating them into
various categories, because there will be separate group
of factors which may have an effect on these categories
seperately. Some factors may not be sufficient to
explain their effects on a particulars categories of
female workers, whose effect may be tremendous in case
of a particular category. For this detail analysis further
research is neccessary.

Some Implications:

It was observed from the study that female work
force participation was very low in eastern India in
comparison to other state of economies. Again the female

participation was found out to be very low in comparision
to their male counterparts. The same pattern prevailed
in rural and urban areas, though it is being somewhat
high incrse of rural areas. Findings of this study
suggests that increase in female workforce participation
needs some programme implimentation and change in social
traditions and customs.

The important factor determining the female workforce
participation is the sex roles as assigned by the society.
The low participation of females in work froce is due
to the womens greater responsibilities for the care of
home and family. In every society, the men's task in the
house hold is much negligent then women. The men's
assigned societal role has historically been that of
bread winner and material supporter of the family,
his wifes the tender of hearth and children. But however
gradually the role of women in the society is fast
changing and women are coming out of their house to
participate in the work force. Although females earnings
add to the family income, still the husband's do not take
a significantly increased responsibilities around the
home. This factor along with childcare and other house
hold jobs further restricted the movement of the females
from home to outside for work . Again where females are
interested to join workforce, the scope of their increase

participation is further restricted by the limitation
of job opportunities due to their low educational
attainment and training. Social tradition and customs
are still important factors in restricting the movement
of female outside their home.

What to be done:

Sex segregation in the labour market is the main
factor which affected the female labour the most. Due
to social economic and cutlural factors the demand for
female labour is concentrated in a few specific jobs
which are unskilled, low paid and which the men think
not to be fit for them. This is not only happening in
the rural labour market but is also true in case of urban
areas. This segregation in the job market is due to the
lacking of education and training of females. So the
policy should be in the direction of increased educational
and training facilities. Again explottation of females
in the labour market can be well recoginised from the
low wages they are paid for equal works with men. So
the policy should be that of paying equal wages to women
for the same jobs they do with man. Enforcing laws
of equal pay for equal value of work will be difficult
to legislate. So the policy should be that of narrowing

the gap between female work force participation and that
of man's by giving speical training to the females to
enter in to the nontraditional jobs. (Sundar, 1981,866-67).

Secondly in the rural areas where, due to
the implementation of certain development programmes,
the benefit is largely enjoyed by men as the head of
the household. For example in case of credit facilities
given as a part of the development programme, the share
of female in the enjoyment of this benefit is very low.
So the policy should be so framed that credit benefits
should go directly to the females. By this credit
bonifits and some training, the selfemployment of
females will increase. "Thus special programme for
women should be there to promote economic and social
self reliance by building on knowledge and skills
that the women already possess, or by teaching new
skills." (Dixon, 1978 : 169)

Thirdly the negative pieces of legislation
which discriminates against females by barring
them from certain kinds and conditions of works should
be relegated, (OECD, 1975, 120). It is always wrong
to say that certain types of jobs are unsuitable
for women, because now only a few jobs left where

females are yet to enter. To day they proved themselves
fit for the most streneous and skilled jobs.

Fourthly sex role differentiation in school
is another important hinderance to increased female work-
force participation. The educational and training pattern
either mental or physical, should be same for both boys
and girls (OECD, 1975,120).

Children may be an important obstacle for women
interested to enter into the workforce. In rural area
though it is not that important in urban areas still
it is an important factor negatively affecting the
female work force participation. So special policy should
be their to provide childcare facilities for working
females. Another important policy is that of restricting
or declining the fertility rates through specific family
planning programme, which will indirectly helpful in
boosting the female workforce participation.

Last but not the least is the changing of the
socio-cultural customs and traditions which debarrdd the
female from entering the workforce. "Promoting massive
national compaigns to change traditional attitudess and
sex roles ideologies that limits women's options in the

family, the community and the society at large.
Government leaders, in particular, will have to
take an unequivocal stand in favour of abolishing
existing laws, customs, regulations and practices
which are discriminatory against women, and to
establish legal protection for equal rights of
men and women." (Dixon, 1978:170)

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