Discussion Paper No. 2/2004 (27)

September 2004

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## Acknowledgement

This paper constitutes a major part of my Ph.D. thesis. The supervisory support extended by late Professor Robin Mukherjee of I.S.I., Kolkata is gratefully acknowledged. I would also like to record my gratitude to Professor Sarmila Banerjee of Calcutta University for a number of insightful comments leading to a more focused and structured presentation. I am also thankful to Professors Achin Chakraborty and Debdas Banerjee of I.D.S., Kolkata , Professor Pabitra Giri of Calcutta University, Professor (Retd.) Samir Guha Roy and Professor Dipankar Coondoo of I.S.I., Kolkata for their suggestions at various stages of this study.

# Labour Market Segregation and Gender-bias


## Abstract

Providing 'equality in opportunity' and 'equality in treatment' have been considered as essential ingredients for gender equality. The present study attempts to assess the extent of gender-bias prevalent in Indian labour market through analyses of the 'opportunity' and 'treatment' dimensions, primarily on the basis of 1991 Census data. The analytical path followed to study the revealed discrepancy in opportunity is an estimation of the extent of occupational segregation by gender. To check the hypothesis related to 'equality in treatment' an analysis of gender domination is carried out where the female- dominated occupations are isolated and identified as the low-paid, low-status jobs.

## TABLE OF CONTENTS

# Labour Market Segregation and Gender-bias

## 1. The problem and motivation for the study

Gender-bias or gender discrimination has been one of the most discussed issues in the contemporary period in almost all the countries in the world. Providing 'equality in opportunity' and 'equality in treatment' to men and women in social, economic and political lives have been considered to be essential ingredients for gender equality. While manifestations of gender-bias may be observed in various spheres of our life, on the economic front, it typically gets reflected in the functioning of the labour market and in the gender inequality in the overall development of a country. One thus finds that compared to their male counterparts, work participation rates of females (FWPR) are very low and such observed difference in participation rates may be attributed to a considerable extent to the embedded gender-bias in the concept of the work.[1] It is argued that status of women and their role or importance in decision making depend, to a large extent, on their earning capability or economic independence. It is thus very important to examine the extent of FWPR, particularly in relation to that of males and see whether there has been any improvement in this regard over time. A deeper analysis of work participation rates, however, further reveals that labour market is segregated by gender. Typically what is found is that there are some occupations, which can be considered as male–dominated or female–dominated and some others reflecting a mixed character. While classifying occupations in this manner, it is argued that there is discrimination against females. It is, as if females are debarred from taking up some occupations even if they are physiologically or otherwise not incapable of performing the work as efficiently as males. It is primarily for this reason that segregation by gender in the labour market[2] has quite often been studied in the context of gender discrimination or gender-bias.

There is a considerable volume of literature in this area — theoretical, dealing with the problem of measurement of the degree of segregation and empirical, concerned with actual measurement of segregation in different countries. In the Indian context also, the studies by Chakravarty & Chakravarty (1995) and Majumder

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[1] See Sen Gupta (2003) for an appraisal of the concept of work.

[2] Labour market segregation by gender can be analyzed on the basis of industries as well. For brevity, we have primarily considered occupational segregation in this study.

& Karmakar (2001) deserve mention. However their major focus was on the 'opportunity' dimension and very little, if at all, was said explicitly about the inequality in 'treatment'. The motivation for the present study stems from the observation that there is perhaps a need for a more specific and in-depth analysis of the phenomenon of segregation for a better understanding of the functioning of the Indian labour market.

The plan of the paper is as follows. The next section deals with the basic concepts of labour market segregation by gender, explains its significance and puts forward some alternative theories. Section 3 spells out the coverage, objective and hypotheses of the study. Methodology and data are described in section 4. Analyses of the results are reported in section 5. The concluding section summarizes the main results and indicates policy implication.

## 2. Labour market segregation by gender: some thoughts

### 2.1. Definition and meaning

Segregation of labour market means division of the labour market on the basis of some characteristics such as gender, ethnicity, caste etc. Occupational segregation by gender is said to exist when the distribution of male and female workers are not identical across occupations. Defined in this strict sense, it then implies absence of complete integration. It becomes a matter of great concern when workers of one gender are found to dominate over the other, thereby resulting in gender stereotypes in occupations.

We may sharpen the concept by using the simple set up by Hutchens (2001). Let us assume that there are n occupations and two types of people viz., men and women. Let $M_i$ and $F_i$ be the number of male and female workers in occupation i $(i = 1, 2,..., n)$ respectively. The total numbers of workers in occupation i is $(M_i + F_i)$ and the total male and female workers over all occupations taken together are $M = \sum_i M_i$ and $F = \sum_i F_i$ respectively. To concretise ideas, let us suppose that there are 4 occupations, 30 male and 15 female workers distributed among the four

occupations in the following manner

Occupations

$$\begin{bmatrix} 5 & 2 & 0 & 8 \\ 10 & 9 & 6 & 5 \end{bmatrix} \begin{matrix} \rightarrow \text{ women} \\ \rightarrow \text{ men} \end{matrix}$$

The above hypothetical distribution shows that there are 10 men and 5 women in occupation 1, and similarly in other occupations.

Suppose now that we want to have an idea about segregation for the above situation. As stated before, this would mean examining the inequality in the distribution of people across occupations. One would think that there is complete segregation when men and women have no occupation in common i.e., there is complete domination of male workers in some occupations and of female works in some others. An example of this kind of situation would be

Occupations

$$\begin{bmatrix} 0 & 0 & 12 & 3 \\ 20 & 10 & 0 & 0 \end{bmatrix} \begin{matrix} \rightarrow \text{ women} \\ \rightarrow \text{ men} \end{matrix}$$

The other extreme would be the case of complete integration or absence of segregation when the ratio of female to male workers is the same in all occupations. In other words, this kind of a situation implies complete equality in the distribution of people across occupations. An example reflecting this kind of situation is

Occupations

$$\begin{bmatrix} 4 & 5 & 4 & 2 \\ 8 & 10 & 8 & 4 \end{bmatrix} \begin{matrix} \rightarrow \text{ women} \\ \rightarrow \text{ men} \end{matrix}$$

It should be clarified that the discussion of the above two extreme situations has been based on $F_i$ and $M_i$ in each occupation – $F_i/M_i$ to be more precise – whereas the definition of segregation has been explained in terms of distribution of people across occupations thereby referring to $m_i\,(=M_i/M)$ and $f_i\,(=F_i/F)$. Actually, for a given situation comparing $f_i$ and $m_i$ for each i, $(i = 1, 2, \ldots, n)$, is equivalent to doing the same in terms of $F_i$ and $M_i$ since $\dfrac{f_i}{m_i} = \dfrac{F_i/F}{M_i/M} = \left(\dfrac{F_i}{M_i}\right) \times \left(\dfrac{M}{F}\right)$, where $(M/F)$ can be treated as a constant of proportionality for a given situation.

## 2.2. Significance

Apart from the concern about equality and a desire to improve the situation for women, the other important reasons for its study, as discussed by Anker (1998), are as follows. **First**, if the segregation by gender is such that women get lower paying and/or lower status jobs, then that may have a negative effect on how men see women and how women see themselves by reinforcing and perpetuating gender stereotypes. The development of such a permanent or long-term subservience negatively affects women's status and development. **Secondly**, it has a negative effect on efficiency and functioning of the labour market. Exclusion of women, from the productive area is a waste of human resources since many of the skilled and better-suited women are excluded from where they could be more productive. **Thirdly**, it imposes a kind of rigidity on the labour market, reducing to a great extent, the ability of labour market to respond to changes. Gender segregation, we must remember, not only implies exclusion of women from 'male' occupations, but also exclusion of men from 'female' occupations.[3] When such inefficiencies and rigidities as mentioned above are viewed in the context of increase in female work participation rates and the need for the labour market to adjust to rapid economic changes, it becomes clear that a country cannot ignore the problem of segregation by gender and yet expect to remain competitive in the face of globalization. **Fourthly**, it has a negative effect so far as the upbringing of future generation is concerned. Labour market opportunities affect, to a large extent, the nature and extent of training and education, which the parents plan for the children. This points towards a perpetuation of the labour market inefficiency and inequality. **Fifthly**, it is more or less an accepted fact that employment of women in the formal sector has a depressing effect on the fertility rate, particularly in the developing countries. If that is so, then segregation by gender would tend to increase fertility rates since in that case women are, by and large, kept out of wage employment altogether (especially in developing countries where the formal sector is small). Any country, which intends to reduce population growth, can ill afford to accept such a situation. **Sixthly**, the existence of occupational segregation by gender is often considered as the major cause for the presence of male-female pay differentials. There is a huge volume of literature concentrating on the

[3] See section 4.1.3.1. for 'male' and 'female'occupations.

wage-differentials and stressing on the discrimination against women for paying them lower wages.

It is possible to put forward other arguments to emphasize the need for studying the nature and extent of segregation by gender. However, in the ultimate analysis, the moot point seems to relate to those of the status in respect of equality and the recognition of the fact that women are as capable of contributing to human welfare as men.

One may, however, argue that mere existence of segregation is not of great significance. For, even a casual empiricism would suggest that it is highly improbable to encounter situation like complete /near complete integration. What is therefore important is the extent of segregation. This is because segregation imposes restriction on the choice of occupations leading to inefficiency in the functioning of the labour market. Thus, if we consider the situation of ***complete segregation*** described earlier, we may notice that it is one of the ***gender stereotypes***. In other words, the set of occupations available to men and women separately are two disjoint subsets of all occupations. Clearly, then a situation of ***complete segregation*** is not at all desirable. The immediate question would be what is then the most preferred situation? While it is difficult to provide a precise answer, since it depends on various socio-economic and demographic conditions of the economy under consideration, it seems possible to give some indication of a better-off situation if we consider the other extreme, i.e., ***complete integration***. Clearly, there is restriction on choice in this case also although it is less severe than that for complete segregation. Can we then say that the case of complete integration is the most preferred situation? The answer to this question is 'not necessarily' since identical distribution may be coupled with high gender 'domination'.[4] Thus, while we may have a situation of identical distribution of men and women across occupations, the ratio of $F_i/M_i (= F/M)$ may be very low or high reflecting the domination of one gender over the other. We may therefore infer that a more desirable situation would be one of identical or near-identical distribution across occupations with as little domination of one gender over the other as possible. However, since real life observation suggests that the number of female workers (F) is almost invariably very low compared to that of male workers

[4] The relationship between segregation and domination has been analyzed in section 4.1.3.2.

(M), indicating thereby an overall male domination, a realistic approach would be to improve overall F/M ratio and at the same time reduce the spread of $F_i/M_i$ distribution.

## 2.3. Some alternative theories

A number of theories[5] have been proposed to explain the existence of occupational segregation. These can be classified into three broad categories:

(i) neo-classical and human capital theories

(ii) institutional and labour market segmentation theories

(iii) non-economic or feminist or gender theories.

Neo-classical economics assumes that workers and employers are rational and that labour markets function efficiently. Hence, both the parties, i.e., workers and employers maximize their respective returns subject to their constraints. Females, having been endowed with less amount of human capital in terms of education, experience etc., are forced to accept certain occupations which are less paying and/or more flexible and less demanding.

Institutional and labour market segmentation theories also rely on well-established economic thought and neo-classical theories. These kind of theories start with the assumption that institutions such as unions and large enterprises, play an important role in determining who are hired, fired and promoted and how much they are paid. Institutional theories also make the assumption that labour markets are segmented in certain ways. But, while each labour market segment functions according to neoclassical theory, it is difficult for workers to move between these segments.

While neo-classical and human capital theories as well as labour market segmentation theories have important contributions to the understanding of gender inequality in the labour market, they provide only a partial explanation as to why there is occupational segregation by gender. There are a number of questions relating to non-economic and non-labour market variables and behaviour, which remain unanswered. Thus, there are questions like why women come to the labour market with less education than men, why housework and childcare are almost always the

[5] See Anker (1997) for a detailed discussion.

sole responsibilities of women, why labour market segregation by gender has persisted to a large extent despite major advancement in recent years in education and work commitment of women. Feminist (gender) theories address many of these issues.

These theories are mainly concerned with non-labour market variables, which economists consider as given. A basic premise of these theories is that women's disadvantageous position in the labour market is caused by and is a reflection of patriarchy and women's subordinate position in society and the family. In all 120societies, household work and childcare are considered as main responsibilities of women while men are seen as mainly responsible for earning. There are also cultural restrictions, customs, taboo etc., which define what is acceptable work for women. Although these societal norms and perceptions vary and have also perhaps been changing slowly, discrimination against women continue.

## 3. Coverage, objectives and hypotheses of the study

### 3.1. Coverage

This work is concerned with analyzing primarily occupational segregation in urban India vis-a-vis India as a whole. Actually, we consider the data for India and its 14 major states. Since we are interested in inter-temporal changes, we carry it out for two different points of time viz., 1981 and 1991. Occupational classification-wise work participation data are generally reported at different levels of disaggregation. We have considered the data at 1-digit, 2-digit and 3-digit levels and carried out our analysis at each of these three levels of aggregation, keeping particularly in mind that the degree of aggregation may turn out to be an important element in our analysis. Our principal data- source is population Census reports of 1991.

### 3.2. Objectives

We may now state the objectives of our study. These are

(i) to analyze the distribution of female to male workers in different occupations i.e., the distribution of $(F_i/M_i)$ where $F_i$ and $M_i$ denote respectively female and male workers in the i-th occupation $i = 1, 2, .., n$, and $n =$ total number of occupations;

(ii) to measure the extent of segregation;

(iii) to examine the inter-state, inter-sectoral and inter-temporal variation in segregation between 1981 and 1991 in absolute terms on the basis of Census data and inter-sectoral as well as inter-temporal variation in segregation at all-India level for 1983, 1993-94 and 1999-2000, using the NSS data;

(iv) to explain the observed interstate variation in the degree of segregation on the basis of the parameters of $(F_i/M_i)$ distribution.

(v) to carry out decomposition analysis in order to understand the effect of aggregation on labour market segregation and to identify, if possible, which of ***occupation*** and ***industry*** plays a greater role in explaining segregation and lastly,

(vi) to bring out clearly the distinction between segregation and domination and examine gender domination in relation to segregation.

### 3.3. Hypotheses

While carrying out the analysis of segregation from the point of view of the stated objectives, we test a number of plausible and interesting hypotheses regarding the extent, variation and nature of the labour market segregation by gender. These can be stated as follows.

1) The first hypothesis states that with increase in the level of disaggregation the extent of segregation increases at a decreasing rate.

2) The second hypothesis states that there exists considerable heterogeneity in labour market that gets reflected in a high degree of interstate variation in segregation.

In terms of decomposition analysis it may further be proposed that

3) disaggregation beyond the 2-digit level of occupational classification will not add much to our understanding of labour market segregation.

4) ***Occupation*** rather than ***industry*** should be more important in explaining labour market segregation by gender.

On the basis of the analysis of gender-domination it may be proposed that

5) female stereotyped occupations generally represent low-status jobs.

The other somewhat related question may be regarding the inter-temporal changes in the labour market segregation.

6) The sixth hypothesis is that there has been a fall in the extent of segregation over time.

Finally, the extent of segregation can be related to the level of development. So, the seventh hypothesis states that

7) the higher the level of development the lower is the degree of segregation.

## 4. Methodology and data

### 4.1. Methodology

It begins with the measurement of segregation and subsequently considers different facets of segregation viz.; decomposition of segregation indices, segregation in the light of gender domination and finally the relationship between segregation and development. While the measurement of the extent of overall segregation and its decomposition into a number of subgroups focus on the 'inequality in opportunity' dimension in the labour market, the analysis of gender domination looks into the aspect of 'inequality in treatment'.

#### 4.1.1. Measuring segregation

Here, descriptive analyses like those of occupational structure, representation ratios are carried out but more importantly attempts are made to provide explanation for the existence of segregation in terms of the distribution of $(F_i / M_i)$, utilizing the tools of analysis of income inequality. Next, Hutchens' set up is used and the rationale behind the need for developing indices for measuring segregation is explained. Some alternative indices are considered.

##### 4.1.1.1. Occupational structure and representation ratios

We begin our analysis with an examination of the occupational structure in terms of the distribution of male $\left(m_i = \frac{M_i}{M}\right)$ and female $\left(f_i = \frac{F_i}{F}\right)$ workers across occupational divisions. To sharpen our understanding we next consider the representation ratio (RR) of an occupation, say the i - th one, defined as the proportion

of female workers in total workers in the occupation i, i.e., $(F_i/(F_i+M_i))$, in relation to the same for all occupations combined together $(F/(F+M))$. Thus, the representation ratio (RR) of ith occupation can be defined as

$$RR_i = \frac{F_i/(F_i+M_i)}{F/(F+M)} = \frac{F_i/P_i}{F/P} \quad \text{for each } i, \quad i = 1,2,....,n. \qquad ....(1)$$

where $P_i = F_i + M_i$, $P = F + M$ =Total workers

Clearly, this ratio can be greater than, equal to or less than one, implying thereby that females in any occupation are over, equally or under represented compared to females in all occupations combined together. These two concepts i.e., proportion of males and females and representation ratios are closely related to one another in the sense that if for any occupation i,

proportion of females $\gtreqless$ proportion of males,

i.e., $f_i \gtreqless m_i$, then it can be easily shown that

$$RR_i \gtreqless 1 \text{ and vice-versa.} \qquad ....(2)$$

#### 4.1.1.2. Distribution of $F_i / M_i$

It may be mentioned that there is a similarity between the study of income inequality and that of occupational segregation by gender. Whereas the literature on income inequality is concerned with measuring the distribution of income across people or families, the literature on segregation assesses inequality in the distribution of people across groups, where groups may represent occupation. Hence, the tools used in the income inequality literature could be employed to the study of occupational segregation. As has been noted by Deutsch, Flückiger and Silber (1994), in order to study occupational segregation, one has to analyse, in one way or the other, the distribution of gender ratio of workers i.e., $F_i/M_i$. We have carried out such an analysis and tried to bring out the basic features of the distribution of $F_i/M_i$ in terms of its basic characteristics viz., measure of location, dispersion, skewness and kurtosis, which are somewhat different from the conventional ones. Let us discuss about these measures briefly.

The measure of location for the distribution of $F_i/M_i$ is defined by Deutsch, et. al. (1994) as the weighted arithmetic mean $\mu$ where

$$\mu = \frac{\sum_{i=1}^{n} \left(\frac{F_i}{M_i}\right)\frac{M_i}{M}}{\sum_{i=1}^{n} \left(\frac{M_i}{M}\right)} = \frac{F}{M}, \quad i = 1, 2, \ldots\ldots, n, \qquad \ldots(3)$$

$\frac{M_i}{M}$ representing the weights. The median $\tilde{\mu}$ is defined as $G^{-1}(0.5)$ where $G^{-1}$ is the inverse of the distribution function $G(x)$, x being equal to the gender ratio $F_i/M_i$.

So far as the measure of dispersion is concerned, instead of using the weighted standard deviation of the ratios $F_i/M_i$, we use, following Deutsch and others (1994), the weighted mean deviation denoted by $\Delta$ which is related to the Gini segregation $G_S$ (defined later). The expression for $\Delta$ is

$$\Delta = 2\mu G_S = \sum_{i=1}^{n}\sum_{j=1}^{n} \left(\frac{M_i}{M}\right)\left(\frac{M_j}{M}\right)\left|\frac{F_i}{M_i} - \frac{F_j}{M_j}\right|, \quad i, j = 1, 2, \ldots\ldots, n \qquad \ldots(4)$$

In a similar fashion, the measure of skewness used is the one suggested by Berrebi and Silber (1987) and is not the standard Pearson's coefficient. It is called coefficient of asymmetry $(A_G)$. It varies between $-1$ and $+1$ and is related to $G_S$. This measure is expressed as

$$A_G = 0.5\left(\frac{\Delta_u - \Delta_L}{\Delta}\right) \qquad \ldots(5)$$

where $\Delta_u$ and $\Delta_L$ are the mean deviations of the ratios $F_i/M_i$ which are respectively greater and smaller than the median $\tilde{\mu}$, $\Delta$ being the mean deviation of the whole distribution.

For measuring Kurtosis also, we use an alternative index $K_G$, suggested by Berrebi and Silber (1989). It is bounded by 0 and 1 and is related to $G_S$. Also, it has several features common to the normally used measures of Kurtosis. It is expressed as

$$K_G = 0.5\,\frac{(\Delta_u + \Delta_L)}{\Delta} \qquad \ldots(6)$$

where $\Delta_L$, $\Delta_U$ and $\Delta$ are as defined earlier.

### 4.1.1.3. Measurement of segregation

In order to understand the need for developing indices for measuring segregation and their implications, let as again follow the simple set up by Hutchens (2001). We have already discussed the two extreme situations relating to segregation in the labour market viz., complete integration and complete segregation. These two extreme situations speak only of theoretical possibilities as in reality we encounter mainly situations where we have neither of these two. How can we measure segregation in such circumstances? To solve this problem, we need to develop indices for measuring the extent of segregation so that we can compare and conclude, as between two distributions of occupations, which one is more or less segregated.

In this context, we can mention about segregation curves, which are again very much similar to the Lorenz curves and can provide interesting insights into the nature of the distributions. The segregation curves have been used by Hutchens (1991), Deutsch, Flückiger and Silber (1994) and many others. It is obtained by plotting the cumulative proportion of males and females (i.e., $m_i$ and $f_i$ where $m_i = M_i/M$ and $f_i = F_i/F$) on the horizontal and vertical axes respectively, both sets being ranked by increasing values of $F_i/M_i$. For the distributions x and y

$$x = \begin{bmatrix} x_{11} & x_{12} & x_{13} & \cdots\cdots & x_{1n} \\ x_{21} & x_{22} & x_{23} & \cdots\cdots & x_{2n} \end{bmatrix} \quad \text{and} \quad y = \begin{bmatrix} y_{11} & y_{12} & y_{13} & \cdots\cdots & y_{1n} \\ y_{21} & y_{22} & y_{23} & \cdots\cdots & y_{2n} \end{bmatrix}$$

the segregation curves may be illustrated as follows :

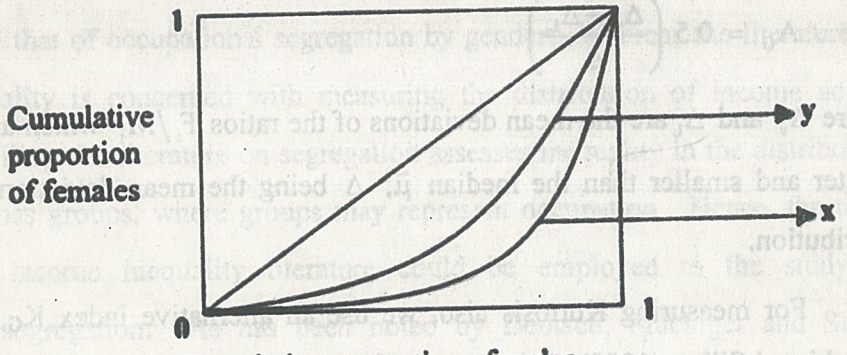



**Figure 1 :** Segregation Curves

If the segregation curve for y lies at no point below and at some points above the segregation curve for x, then the y-distribution is less segregated than the x-distribution. If the two segregation curves do not intersect, we have an answer to the question as to which distribution is more or less segregated. If they do, and that

happens quite often, then the segregation curves fail to give any ordering and we need numerical measures. Incidentally, like in the case of a Lorenz curve, it can be shown that the area between the segregation curve and the diagonal is equal to half the value of the Gini-segregation index $(G_S)$ discussed later.

#### 4.1.1.4. Indices of segregation

There is now a well-developed literature on the indices for measurement of segregation. The index, which is most widely used in the measurement of segregation and also in other types of inequality analysis, is the one developed by Duncan and Duncan (1955). It is defined as

$$DDI = \frac{1}{2}\sum_{i=1}^{n} |f_i - m_i|, \quad i = 1, 2, ....., n \qquad ....(7)$$

where $f_i = F_i/F$ and $m_i = M_i/M$ represent the proportion of female and male workers in the ith occupation respectively. The Duncan and Duncan index is also sometimes referred to as the dissimilarity index (ID).

The Duncan and Duncan index has been modified and refined in various ways. However, the basic idea and approach lying behind the measure permeates through all the changes proposed.

Silber (1989) proposed another index of segregation, which is equal to the weighted Gini index $G_S$[6] of the ratio $(F_i / M_i)$. It is defined as

$$G_S = \frac{1}{2}\sum_i \sum_j m_i m_j \left|(f_i/m_i) - (f_j/m_j)\right| \qquad ....(8)$$

Written in this form $G_S$ is not defined if any of $m_i$ equals zero. It is quite possible that some occupation is completely dominated by females in which case the corresponding $m_i$ becomes zero. To avoid this kind of problem and to ensure that $G_S$ always defined it is expressed as

$$G_S = \frac{1}{2}\sum_{i=1}^{n} \sum_{j=1}^{n} |f_i m_j - f_j m_i| \qquad ....(9)$$

[6] Since we have mostly utilized the Gini segregation index in this study, we retain the symbol used by Silber.

We refer to the measure in this form as the Gini-measure of segregation. This can also be expressed in a more compact form as

$$G_s = m' G f \qquad \ldots(10)$$

where $m'$ and $f$ are respectively the row and column vectors of the proportion $m_i$ and $f_i$ of occupation i in total male and female workers, both sets of proportions being ranked by decreasing values of the ratios $f_i / m_i$. In the above expression G is a square matrix in which the typical element $g_{ij}$ is equal to zero if $i = j$, -1 if $i < j$, and +1 if $i > j$.

Kakwani (1994) developed a new class of indices called the $\beta$-class of segregation indices defined as

$$S_\beta = \frac{\alpha^\beta (1-\alpha)^\beta}{\alpha^\beta + (1-\alpha)^\beta} \sum_{i=1}^{n} \frac{(f_i - m_i)^{\beta+1}}{\pi_i^\beta}. \qquad \ldots(11)$$

where $\beta \geq 0$ and $\alpha$ is the proportion of females in the total work force and

$$\pi_i = \alpha f_i + (1-\alpha) m_i \qquad \ldots(12)$$

is the proportion of of persons (both males and females) in the ith occupation, for $i = 1, 2, \ldots, n$. It can be seen very easily that when $\beta = 0$, $S_\beta$ = DDI, the Dissimilarity index proposed by Duncan and Duncan. It may be mentioned that in this study $S_\beta$ has been estimated for $\beta = 1$ and is denoted as KI.

Hutchens (2001) has recently proposed another measure of segregation, which he calls the Square-root index. It is defined as

$$SQRI = 1 - \sum_{i=1}^{n} \sqrt{f_i m_i} \qquad \ldots(13)$$

The minimum value of all the indices mentioned so far is 'zero', which means no segregation (or complete integration) and the maximum is 'one' implying complete segregation, i.e., some occupations are completely male dominated while some others are completely female dominated.

### 4.1.1.5. Desirable properties of a measure of segregation

It has already been mentioned that there are now a number of measures of segregation available in the literature. There is naturally a question of choice based

on some 'good' or desirable properties[7] exhibited by the measures. Different researchers have postulated alternative sets of desirable properties, which seem to be plausible and evaluated the different measures in terms of those properties. Typically, the alternative sets of properties, stated sometimes in the form of axioms, overlap to a large extent. It may be noted that the properties expected to be satisfied by a measure involve value judgments and hence the properties should be as little restrictive as possible. The more restrictive the properties are the stronger is the value judgment involved.

Following Hutchens (2001), let us mention the following set of properties and consider the measures in the light of those properties.

**(P1) Homogeneity :** This property implies that a change in absolute number of men/women in the work force does not change segregation so long as the shares remain unchanged. This is also referred to as Scale Invariance.

**(P2) Symmetry in Groups :** This property means that it does not matter whether an occupation is labeled 1 or 2; it is only the distribution of different types of people i.e., males and females across occupation that matters.

**(P3) Movement between Groups :** It is closely related to the Pigou-Dalton transfer principle in the literature on income inequality. In the present context, it implies that if there is a movement of a woman from an occupation, which already has a low female to male ratio into an occupation with a higher ratio of female to male, then such a movement increases segregation.

**(P4) Insensitivity to Proportional Divisions :** This implies that when a group is divided into subgroups with the same ratio of males to females, through a proportional division, then segregation should not be altered.

Hutchens has pointed out that **(P1) – (P4)** are only sufficient to justify a partial ordering of distributions. If the segregation curves for two distributions do not intersect, then any two measures, which satisfy these four properties will give the same result about which distribution is more segregated. Additional properties are necessary to obtain a complete ordering. Hutchens proposes three additional properties for the purpose.

[7] See Kakwani (1994) and Hutchens (2001) for discussions on desirable properties of a measure of segregation.

**(P5) Zero Member Independence :** This means that a group with no members has no effect on segregation.

**(P6) Symmetry in Types :** If type 1 and type 2 people (i.e. males and females) exchange labels then it does not change intensity of segregation. We may note that this differs from **(P2)** which deals with symmetry in groups.

**(P7) Additivity in Groups :** It helps us to understand the contribution of a particular set of occupations, say, the 'white – collar' occupations to total segregation. It gives a meaningful result if segregation in this subset of occupations is not affected by changes in segregation among occupations outside it. It is only then that one can split total segregation into distinct, say, within 'white-collar' and 'not within white – collar' occupations.

Hutchens (2001) considered the commonly used measures of occupational segregation – the Dissimilarity (or the Duncan and Duncan) index and the Gini segregation index in the light of the properties stated above. He has shown that while Square root index satisfies all the seven properties, the Dissimilarity index violates **(P3)** and the Gini segregation index does not satisfy **(P7)**.

So far as the Kakwani measure is concerned, we may mention that Kakwani (1994) also has proposed a set of seven axioms, which overlaps with Huchens' considerably. He has proved that both the Gini measure of segregation and his proposed measure satisfy all the seven axioms stated in his paper.

Considering on the whole and, in particular, that violation of **(P7)** by the Gini segregation index is a less serious one, we preferred to work mostly with this segregation index in this study.

### 4.1.2. Decomposition analysis

We next consider a decomposition analysis and try to identify factors contributing to the overall segregation. Specifically, we consider the following two issues, viz., (i) effect of aggregation on the extent of segregation and (ii) relative importance of occupations and industries in explaining the overall segregation by gender. For analytical convenience, we use the Gini-segregation index for this analysis. The decomposition procedure of this index as has been done here may be found in Silber (1989a, 1989b).

#### 4.1.2.1. Analysis of effect of aggregation

Here, what we want to investigate, specifically speaking, is whether or not there is any effect of disaggregation, say, from the 2-digit to the 3-digit level, on the value of the Gini-segregation index. Thus, suppose we find that the value of the segregation index at the 3-digit level of classification remains almost the same as that at the 2-digit level. This would imply that further disaggregation to the 3-digit level within each two digit does not add much to the measure about the extent of segregation. We follow Silber (1989a) in assessing the impact of aggregating the occupational classifications. This is similar to the break up of the Gini index by population subgroups (Silber, 1989b).

Let $G_T$ represent the value of Gini-segregation index based on a 3-digit classification of the occupations. This value indicates the extent of segregation when the maximum possible disaggregation of the occupations is used. Let $G_B$ be the value of the segregation index when the 2-digit level of classification is invoked. Suppose that there are n 2-digit occupations, the i-th 2-digit occupation containing $n_i$ 3-digit occupations. Let $M_{ih}$ and $F_{ih}\,(h = 1,2,..., n_i)$ refer respectively to the number of male and female workers in the h-th 3-digit occupation within the i-th 2-digit occupation. Finally, let us define $M_{i.}$, $F_{i.}$, M and F as

$$\left.\begin{aligned} M_{i.} &= \sum_{h=1}^{n_i} M_{ih}, \quad F_{i.} = \sum_{h=1}^{n_i} F_{ih} \\ M &= \sum_{i=1}^{n} M_{i.}, \quad F = \sum_{i=1}^{n} F_{i.} \end{aligned}\right\} \qquad ...(14)$$

We may then write the Gini-segregation indices at the 3-digit and 2-digit levels as

$$G_T = [.....(M_{ih}/M).....]\ G\ [.....(F_{ih}/F).....] \qquad ...(15)$$

$$G_B = [.....(M_{i.}/M).....]\ G\ [.....(F_{i.}/F).....] \qquad ...(16)$$

where G represents the grouping matrix whose typical element $g_{ij}$ is equal to 0 if $i = j$, $-1$ if $i < j$ and $+1$ if $i > j$.

Next, the value of segregation $G_i$ within the i-th 2-digit occupation can be written as

$$G_i = [.....(M_{ih}/M_{i.}).....]\ G\ [.....(F_{ih}/F_{i.}).....] \qquad ...(17)$$

It may be pointed out that the elements of the vectors to the right and left of the matrix G have to be ranked by decreasing values of $F_{ih}/M_{ih}$ in (15) and (17) and $F_{i.}/M_{i.}$ in (16).

It may be noted that the index defined in (17) represents the segregation within the i-th 2-digit occupation. There are n such 2-digit occupations and the same can be obtained for each of the n occupations. Following Silber (1989b), the contribution $C_W$ of the segregation within 2-digit occupations to the total segregation may be defined as

$$C_W = \sum_{i=1}^{n} (F_{i.}/F)(M_{i.}/M) G_i \qquad ...(18)$$

Following the same paper by Silber (1989b) it can be proved that the total segregation $G_T$ is additively decomposable as follows

$$G_T = G_B + C_W + C_O \qquad ...(19)$$

where $C_O$ is an interaction term obtained as a residual by subtracting the sum of $G_B$ and $C_W$ from $C_T$.

Silber (1989b) has argued that a decomposition of the Gini index is possible even in the case of overlapping partitions of the occupational distribution of the gender ratio. In such a case, however, a third contribution appears which is the interaction term, also sometimes called, a 'crossover' effect, in addition to the 'between' and 'within' occupation segregation. It represents the difference between $G_T$ and the level of segregation one would obtain if the 3-digit occupations were classified, first by decreasing values of $F_{i.}/M_{i.}$, corresponding to the 2-digit occupations to which they belong and then by decreasing values of $F_{ih}/M_{ih}$ within each 2-digit category. The difference between such a classification and the one used in the calculation of $G_T$, where the 3-digit occupations are immediately classified by decreasing values of the ratios $F_{ih}/M_{ih}$ represents a measure of overlap existing between the n distributions of the ratios $F_{ih}/M_{ih}$. Hence, the term $C_O$ is referred to as interaction.

#### 4.1.2.2. Relative impact of occupations and industries in assessing the extent of segregation

The next set of decomposition exercises carried out is intended to assess the relative impact of occupations and industries on the intensity of the segregation by gender. Earlier when we considered the Gini-segregation index by occupations at different levels of aggregation, the focus was on finding out the extent of occupational[8] segregation as such. Such an analysis, however, does not provide any insight regarding the segregation across industries (occupations) within the occupations (industries). It would, therefore, be interesting to examine and compare 'within occupations' and 'within industries' segregation, so as to understand, of the two aspects viz., 'what kind of a work, a person, male or female performs' (occupation) and 'where he/she performs it' (industry), which one assumes greater role in explaining overall labour market segregation by gender.

We may carry out such analysis again by following a procedure suggested by Silber (1989a) in the context of analysis of income inequality. It has been shown that the overall level of segregation, denoted by $G_S$, for a given degree of aggregation, is equal to the sum of

(i) The 'between-occupations' segregation, $G_S^0$.

(ii) The weighted sum of the 'within – occupations' industrial segregation, $G_{S,i}^w$, the weights being equal to the product of the shares of males and females in occupation i,

(iii) An interaction term $I_1$, which, as in the previous case, measures the extent of overlap between the various occupations of the distributions within occupation i of the ratios $(F_{ih}/M_{ih})$ for the various industries h, where $F_{ih}$ and $M_{ih}$ respectively represent the number of female and males workers in h-th industry $(h = 1,2,...,H)$, within the i-th occupation $(i = 1,2,...,K)$. Symbolically, the decomposition expression can be written as

$$G_S = G_S^0 + \sum_i (M_{i.}/M)(F_{i.}/F) G_{S,i}^w + I_1 \qquad ...(20)$$

[8] See Sen Gupta (2003) for an analysis of industrial segregation by gender.

where

$$G^{w}_{S,i} = [.....(M_{ih}/M_{i.}).....]\ G\ [.....(F_{ij}/F_{i.}).....] \qquad ....(20a)$$

and G is the grouping matrix defined earlier. Also,

$$M_{i.} = \sum_{h} M_{ih},\ F_{i.} = \sum_{h} F_{ih},\ M = \sum_{i}\sum_{h} M_{ih},\ F = \sum_{i}\sum_{h} F_{ih} \qquad ...(20b)$$

In the same manner it can be shown that

$$G_S = G^{I}_S + \sum_{j} (M_{.j}/M)(F_{.j}/F)\, G^{w}_{S,j} + I_2 \qquad ...(21)$$

where the meaning of the terms on the right – hand side remain the same with the term 'occupation' replaced by 'industry'.

It may be noted that the second term on the right hand side of the expression (20) gives us some information about the specific role of industries on segregation by gender, when the impact of occupations is kept constant since the individual 'within occupation' segregation $G_{S,i}$ is based on the 'conditional probabilities'. In the same way, the second term of expression (21) provides the specific contribution of occupational segregation by gender to the overall segregation, the impact of industries remaining constant.

### 4.1.3. Segregation and domination by gender

The indices of occupational segregation by gender discussed so far yield some summary measures of the inequalities in the distribution of male and female workers across occupations. However, being index numbers, such measures are too simple to provide complete and fully satisfactory information on occupational segregation. For a better understanding of the functioning of the Indian labour market, particularly from the perspective of inequality in treatment dimension, we then resort to the analysis of the aspect of gender 'domination' of the occupations. It not only leads to the concept of gender stereotyping of occupations but also brings in a number of other interesting related issues and thereby presents a more insightful perspective of the labour market compared to simply measuring the extent of occupational segregation by gender.

#### 4.1.3.1. Gender domination in labour market : Definition and measurement

Domination, or sometimes also called concentration, "is concerned with the sex composition of the workforce in an occupation or set of occupations. Whereas segregation refers to the separation of the two sexes across occupations, concentration refers to the representation of one sex within occupations". (Blackburn and Jarman, 1997; Siltanen, Jarman and Blackburn, 1995; James and Taueber, 1985). Clearly then, the measurement of domination will have to be based on the ratio of female (male) workers to total workers in any occupation. It may, however, be noted that, for the any, say the i-th, occupation

$$\frac{F_i}{M_i} = \frac{F_i/P_i}{M_i/P_i}, \quad i = 1,2,\ldots\ldots, n$$

$$= \frac{F_i/P_i}{(1 - F_i/P_i)}$$

Therefore, $y_i = \frac{x_i}{1 - x_i}$

where $y_i = F_i/M_i$ and $x_i = F_i/P_i$, $\quad 0 \le x \le 1$.

Now, if $x_i$ increases, $(1 - x_i)$ falls which means $x_i/(1 - x_i)$ and hence $y_i$ increase. On the other hand, if $y_i$ increases then $x_i$ also increases. Hence, any discussion on domination can equivalently be made in terms of either $F_i/P_i$ (or $M_i/P_i$, the direct measure of domination) or $F_i/M_i$.

In this context, it may be mentioned that a distinction is often made between what is called ***absolute domination*** and ***relative domination***. ***Absolute domination*** is defined in terms of $F_i/P_i$ $(\text{or } M_i/P_i)$ for the i-th occupation and it is considered to be significant when it exceeds some critical value. Different researchers have chosen different critical values to judge significance of domination. Anker, for example, has considered 80 per cent of the workers of one gender in an occupation for it being classified as dominated. In fact, he described such occupations as 'male' or 'female' occupations depending on workers of which gender are at least 80 per cent of workforce. Clearly there is subjectivity involved in such choice of the critical values while defining domination. As an alternative some researchers have the Bootstrap technique proposed originally by Efron (1979). This method generates the distribution of the ratio empirically which can then be used objectively to decide

whether domination of one gender on the other can be considered significant or not. This kind of approach has been used, among others, by Deutsch, Flückiger and Silber (1994). We have, however, neither used the Bootstrap technique nor the technique developed by Anker and some others. The reason for this is as follows. In Indian context, we expect that barring a few occupations where females may be engaged to a greater extent, it is males who predominate in rest of the occupations. But whether such domination remains more or less uniform or is found in varying intensity across different occupations seems to be an interesting aspect to study. Therefore, instead of making a dichotomous or perhaps trichotomous classification of occupations as 'male-dominated', 'female-dominated' and 'mixed' (or 'gender-integrated'), it seems reasonable to categorize occupations into a number of groups of different levels of intensity of domination of either of the genders. We thus consider the following groups for this purpose[9]

(i) Completely Male Dominated (CMD), if $\frac{M_i}{P_i} = 1 \Rightarrow \frac{F_i}{P_i} = 0$

(ii) Highly Male Dominated (HMD), if $0.8 \le \frac{M_i}{P_i} < 1 \Rightarrow 0 < \frac{F_i}{P_i} \le 0.2$

(iii) Moderately Male Dominated (MMD), if

$$0.5 < \frac{M_i}{P_i} < 0.8 \Rightarrow 0.2 < \frac{F_i}{P_i} < 0.5$$

(iv) Equally Concentrated or Divided (EC) if $\frac{M_i}{P_i} = \frac{F_i}{P_i} = 0.5$

(v) Moderately Female Dominated (MFD), if

$$0.5 < \frac{F_i}{P_i} < 0.8 \Rightarrow 0.2 < \frac{M_i}{P_i} < 0.5$$

(vi) Highly Female Dominated (HFD), if $0.8 \le \frac{F_i}{P_i} < 1 \Rightarrow 0 < \frac{M_i}{P_i} \le 0.2$

***Relative domination***, on the other hand, is defined as the concentration of a gender in an occupation in relation to that gender's position in the workforce force as a whole. Thus, talking about females, the relative female domination in the i-th occupation is defined as $(F_i/P_i)/(F/P)$, i.e., the proportion of females in the i-th

[9] No category as Completely Female Dominated (CFD) was defined since it was observed that till date no such occupation exists in the India situation.

occupation to the overall proportion of females in the workforce. Actually, this is what we have described earlier as 'representation ratio'. This measure tells us about the gender domination in a particular occupation relative to the overall domination. It may happen that an occupation, which is not significantly gender dominated in the absolute sense, may turn out to be so when judged in terms of the overall situation. It is, therefore, important to also study the phenomenon of relative domination, especially for countries like India where the work participation for females in very low compared to their male counterparts. In this study, however, it may be mentioned that we have focused, for brevity, mainly on absolute gender domination.

**4.1.3.2. Relationship between segregation and domination by gender**

It should be clear by now that the concept of segregation and domination, though not equivalent, are closely related to each other. To be precise, if there is occupational segregation by gender in the labour market, say, at the 2-digit level of classification of occupations, then that would mean non-uniformity in the distribution of $F_i/M_i$ across the 2-digit occupations, i.e., $F_i/M_i \neq F/M$, $\forall$ i, i = 1, 2, ..., n where n is the number of 2-digit occupations in the economy. This indicates, domination of one gender over the other, either in all occupations in different degrees or in some occupations, rest of the occupations being dominated by the other gender. In other words, segregation then implies domination. If on the other hand, there is domination such that it is one particular gender that dominates over the other uniformly across all the n occupations i.e., $F_i/M_i = F/M \neq 1$ $\forall$ i, we have zero segregation. Interestingly, however, if there is no domination at all which means the above relation reduces to $F_i/M_i = F/M = 1$ $\forall$ i, then again we get a zero value of segregation. Thus, we may conclude that segregation implies gender domination but the converse is not necessarily true. To put it more succinctly, gender domination is a necessary but not a sufficient condition for segregation.

Understanding of this relationship helps as greatly while we explain the observed interstate variation using the parameters of the distribution of $(F_i/M_i)$.

### 4.1.4. Segregation and development

At the final stage of our analysis, we have dealt with one of our main interests of study viz., the relationship between labour market segregation by gender and the level of development. For this purpose, we have chosen a number of indicators of development for the states.

We have obtained both pair wise Pearson's product – moment correlation coefficients and Spearman's rank correlation coefficients respectively between the values of Gini segregation index and some selected development indicators for the states, and then between the ranking of states on this basis, taking the Gini segregation index and one of the indicators at a time.

## 4.2. Data

The present study is based primarily on the 1991 population Census data. For studying the inter-temporal changes we have used the 1981 Census also. It may be mentioned that the Census is the only source, which provides detailed information on various aspects of work and workforce at various levels of disaggregation. When workers are classified in the Census by occupation or industry, cultivators and agricultural labourers are not taken into account. This implies that a major part of workers engaged in primary sector gets excluded from detailed levels (1-digit, 2-digit and 3-digit) of occupational classification. Hence, we decided to exclude 'Farmers, Fishermen, Hunters, Loggers and related workers' also and confine our study to the nonagricultural occupations only.

It is well known that the concept of worker has undergone changes over the Censuses, sometimes drastically. The 1991 Census followed basically the concept of work that was used in 1981 and hence in our inter-temporal analysis we have not considered any Census year prior to 1981 Census. Furthermore, we have concentrated only on 'main' workers.

The other source of data used in this study is the quinquennial survey reports on Employment and Unemployment of the National Sample Survey (NSS). However, unlike the Census data, the NSS data are available in such reports at a very highly aggregated level. We have thus been compelled to carry out the analysis only for 1-

digit and 2-digit levels for all India. Also, we have considered the estimates of 'principal status' workforce with 'usual activity'.

Lastly, while examining the relation between segregation and development, we have chosen a number of indicators of development, data on which were obtained from various official sources.

## 5. Results

The results of the entire analysis are reported serially in four sub-sections related to the measurement of segregation (5.1.), analysis of decomposition (5.2.), analysis of gender domination (5.3.) and lastly, segregation and development (5.4.).

### 5.1. Measurement of Segregation

Here the analysis is carried out both at the all-India level and inter-state level, primarily in terms of Census data. Only the last sub-section (5.1.2) tries to look into the extent of segregation exclusively at the all- India level on the basis of NSS data. The analysis begins with that of occupational structure, representation ratio followed by the distribution of $F_i/M_i$ leading to a calculation of alternative segregation indices along with an analysis of their pair-wise rank correlations. This approach provides us with a sound quantitative basis to select the Gini index as the representative index of segregation.

#### 5.1.1. Results on the basis of Census data

##### 5.1.1.1. Occupational structure and representation ratios

To begin with, we consider the occupational structure (Table 1A). We find that

(1) for males and except for a few states, for females as well, the largest occupational division is 'Production and Related Workers, Transport Equipment Operators and Labourers' and the smallest one is 'Administrative, Executive and Managerial Workers'. However, while for males the other two large occupational divisions are 'Sales Workers' and 'Clerical and Related Workers' for females these are 'Professional, Technical and Related Workers' and 'Service Workers'.

(2) Interestingly, for the largest occupational division, barring Punjab and Haryana in the North while Gujarat and Maharashtra in the West, percentages of female workers are higher than those of male workers in all other states. The abovementioned four states display a reverse pattern in this regard where the relevant percentages of male workers outweigh, to a great extent, the same of female workers .

(3) So far as the occupational division 'Professional, Technical and Related Workers' is concerned, we find that the relevant percentages are higher for female workers in all the states, the magnitudes of differences being considerably higher in some states, in particular, in Punjab and Haryana.

(4) In the remaining occupational divisions, percentage females are higher only for 'Service Workers'.

In terms of the representation ratios as presented in (Table 1B), as explained earlier, the above results can be interpreted. It may be pointed out that among those cases where the representation ratio is greater than one, there are some having very large values, in particular, for the occupational division viz., ''Professional, Technical and Related Workers' in Punjab and Haryana. This may be a reflection of the fact that in these two states the ratio of female to total workers is very low. This being the case the representation ratio gets pushed up. There is also the fact that percentage of female workers is overwhelmingly greater than that for males in this occupation.

### 5.1.1.2. Distribution of $F_i/M_i$

Coming next to Table 2, which provides summary measures about the distribution of the ratio of female to male workers $(F_i/M_i)$ based on the 2-digit level of occupational classification for total and urban sectors respectively, we find that the means or overall (F/M) ratios are very close as between total and urban sectors in the Western, Central and Northern states. In the East and the South, the differences are much pronounced. Looking at the individual states one finds considerable differences among states for both urban and total sectors. All the Southern states have much higher overall (F/M) ratios. On the other hand, states in the West (barring Maharashtra) and the North have relatively low values of (F/M). In the East, Orissa and West Bengal are somewhat similar in this respect and Bihar, as expected, shows very low values of female to male workers. It may be noted that this is despite systematic increase in the female work participation rates in majority of the states

under study over time.[10] In terms of variability, we find that the distributions for the Southern states have very high variability relative to those in the other states. In fact, a general feature is that the higher the value of $(F/M)$, the higher is the variability in the distribution $(F_i/M_i)$. Further insight into the nature of the distribution can be had from the values of 'Dispersion-U'and 'Dispersion-L'. These two measures give the dispersion among the $(F_i/M_i)$values above and below the median value respectively. It is seen that generally speaking 'Dispersion-L' values are almost negligible compared to the 'Dispersion-U' values implying much greater variability among the $(F_i/M_i)$ values above the median.

### 5.1.1.3. Segregation indices

Let us now consider the more precise measure of occupational segregation, the segregation indices as presented in Tables 3A—3C.

(i) The first interesting point, which we note from these tables, is that the data support the basic two hypotheses viz., (a) 1-digit level of classification of occupations conceals segregation by gender to a great extent. This causes a large increase in the measured level of segregation when we go from the 1-digit level to the 2-digit level of classification. (b) Disaggregation of data from 2-digit level to 3-digit level does not reveal much additional information as can be seen from the values of the indices at these two levels of aggregation.

(ii) There exists sufficient amount of interstate variation. However, quite contrary to our expectation, these indices are much higher for the states like Punjab, Haryana, and Kerala, while much lower in Bihar and Uttar Pradesh. This finding broadly corroborates those made by Anker (1998) in his study in this regard. While measuring the extent of segregation by gender in 41 countries in the world including India, he noticed, quite surprisingly, lower values of segregation in Asia compared to those observed in Europe.

(iii) It may be noted that whereas the values of Gini index $(G_S)$ and Duncan and Duncan Index (DDI) are more or less comparable those of the other two indices, viz., Square root index (SQRI) and Kakwani index (KI) are very low

[10] See Sen Gupta (2003) for an analysis of FWPR for major Indian states during 1961 – 2001.

and similar to each other. This feature is more or less valid for both total and urban sectors as also for the different states.

(iv) Intersectoral variation exists but is not very much pronounced, generally speaking. However, values of indices for the urban sectors are quite systematically higher than those for the total sectors.

### 5.1.1.4. Rank analysis

The formulae for measuring the segregation indices described earlier are likely to give different numerical values, particularly because the indices have been developed on the basis of different sets of properties. One would then like to examine the extent to which the relative positions of the states remain invariant in terms of the alternative indices. We have therefore calculated Spearman's Rank Correlation Coefficients based on the rankings of the states by the four measures, considered pair wise at a time, and obtained the rank correlation coefficients for all the possible combinations.

Secondly, as mentioned earlier, the segregation indices have been obtained at each of the 1-digit, 2-digit and 3-digit levels of occupational classifications. To find out whether the states maintain their positions relative to each other as the level of aggregation changes, we have calculated the rank correlation coefficients pair wise for all pairs by ranking the states in terms of the values of the segregation indices at different levels of aggregation.

Thirdly, it would be interesting to see the effect of time on the relative positions of the states so far as the segregation by gender in the Indian labour market is concerned. To understand this, we have ranked the states by the values of the Gini segregation index in 1981 and 1991 and found out the rank correlation coefficient.

Lastly, to examine to what extent the relative positions of the states agree as between the urban and the total sectors we again carry out some rank analysis.

Let us now report the results of above rank analyses. It may be mentioned however that in this section we report the results of the first two sets of rank analyses. The remaining two sets are analysed in section 5.4 viz., 'Segregation and Development'.

(1) (a) The first set of rank correlation matrices presented in Tables 4A – 4F give the values of Spearman's rank correlation coefficients when the states are ranked by the values of alternative indices (Tables 3A – 3C). It may be noted that irrespective of sectors and degree of aggregation, the values of rank correlation coefficients are very high and significant at 5 per cent level, except for the rank correlation coefficients between the Duncan and Duncan and Kakwani indices at the 1-digit level in the total sector and at the 2-digit level in the urban sector.

(b) Moreover, it is also clear that the rankings of the states by Gini segregation index and those by other indices are in high agreement.

(2) The next set of rank correlation matrices presented in Tables 5A – 5H, displays the rank correlation coefficients, for each of the measures of segregation, when the states are ranked by the values of the indices at 1-digit, 2-digit and 3-digit levels of classification. The most important point to observe in this case is that the values of the rank correlation coefficients are very high between 2-digit and 3-digit levels compared to the same between 1-digit and 2-digit as well as between 1-digit and 3-digit levels. This is true for both the urban and total sectors. In fact, the rankings of the states at 2-digit and 3-digit levels are almost identical. This finding, coupled with the earlier observation in 1(b) justifies the use of Gini segregation $(G_S)$ index at 2-digit level for further analysis of our study.

**5.1.1.5. Regression analysis**

The non-linear relationship of $G_S$ with mean and dispersion of the distribution of $(F_i/M_i)$ as given by (4) in section 4.1.1.2. indicates that variations in $G_S$ should be attributable to corresponding variations in this two parameters of the said distribution. One may, however, make a linear approximation to show that $G_S$ is linearly related to them through regression analysis. Since, this is an approximate relation, one may include two additional parameters viz., skewness and kurtosis as explanatory variables into this relationship. To be more precise one may thus consider the Gini segregation index at the 2-digit $(G_{2T} \& G_{2U})$ level and characterize

the distribution of $(F_i/M_i)$ in terms of the standardized parameters viz., mean (mt & mu), dispersion (dt & du), skewness (skt & sku) and kurtosis (kt & ku) for total and urban sectors respectively. Since skewness and kurtosis have been developed in terms of dispersion-upper (dut and duu) and dispersion lower (dlt and dlu), one may consider these two parameters (defined earlier) also as separate explanatory variables in some of our exercises. In other words, we try out the following set of regressions both for total and urban sectors.

$$G_{2t} = \beta_0 + \beta_1 mt + \beta_2 dt + \beta_3 skt + \beta_4 kt + u \quad \text{....(22)}$$

$$G_{2t} = \beta'_0 + \beta'_1 mt + \beta'_2 dt + \beta'_3 skt + \beta'_4 kt + \beta'_5 dut + \beta'_6 dlt + w \quad \text{....(23)}$$

where u and w represent the disturbance terms.

For the urban sector, (22) and (23) reduce respectively to,

$$G_{2u} = \gamma_0 + \gamma_1 mu + \gamma_2 du + \gamma_3 skt + \gamma_4 ku + \epsilon \quad \text{....(24)}$$

and

$$G_{2u} = \gamma'_0 + \gamma'_1 mu + \gamma'_2 du + \gamma_3 skt + \gamma'_4 ku + \gamma'_5 duu + \gamma'_6 dlu + \epsilon' \quad \text{....(25)}$$

where $\epsilon$ and $\epsilon'$ are the disturbance terms.

If now we observe variations in $G_s$ over a number of sample situations (for a single state over time or across states at a particular point in time, as in our case), then we may be interested in examining the extent to which such observed variations can be ascribed to the corresponding variations in the parameters of the distribution of $(F_i/M_i)$.

We now find that (Tables 6A – 6B)

(1) $R^2$ and $\bar{R}^2$ (adjusted $R^2$) are very high for both the sectors, more so for the urban sector

(2) For both mean and dispersion, the estimated coefficients have their expected signs. Given the fact that in countries like ours, females' representation in workforce is very low, it suggests that as the mean i.e., (F/M), increases, implying thereby a relative rise in female work participation rates, there will be an inequality depressing effect as measured by Gini segregation index. Hence, the negative sign for the estimated coefficient of (F/M). On the other

hand, as the dispersion of the distribution of $(F_i/M_i)$ increases, inequality of the distribution increases causing the value of the Gini segregation index to rise and hence, a positive sign for the estimated coefficient of dispersion.

(3) Also, in both sectors, mean is found to be significant at 1 per cent level.

(4) The dispersion, on the other hand, is significant at 5 per cent level in both these sectors .

(5) In none of the cases, barring Dispersion-L for the total sector, the coefficients of the other parameters turn out to be significant, even at 10 per cent levels. On the whole, it seems that the mean and dispersion of the distribution of $(F_i/M_i)$ together explain the variation in the Gini segregation index quite satisfactorily.

Coming next to the other regressions (Tables 6C – 6D) where we regress Gini segregation index on four parameters viz., mean, dispersion, skewness and kurtosis of the distribution of $(F_i/M_i)$, the observations mentioned above get corroborated, by and large.

### 5.1.2. Results on the basis of NSS data

Because of the scanty nature of NSS data, as available in its different published reports and as mentioned earlier, we have confined ourselves to utilizing such data at the all-India level only, for rural and urban sectors separately. On the basis of the estimates thrown up by the NSS, we have calculated the Gini segregation indices for three rounds of data for early eighties, early nineties and late nineties.

It is found (Table 7) that for all the three rounds, the values of indices at 2-digit level are considerably higher compared to the 1-digit level figures. This is much more so for the urban sector than that for the rural sector. This vindicates the results obtained previously on the basis of the Census data. However, so far as the variation over time is concerned, there is no clear cut pattern and, in fact, the picture is different as between the two sectors. If we confine ourselves to the decade of the nineties, there has been a fall in degree of segregation in the rural sector while, for the urban sector, it is the other way round.

## 5.2. Decomposition analysis

### 5.2.1. Effect of aggregation

We have carried out a decomposition analysis on the basis of the population Census data of 1991 for measuring the effect of aggregation while moving from 1-digit to 2-digit and then disaggregating from 2-digit to 3-digit classification. The results are presented in Tables 8A and 8B for the states and for the total and the urban sectors respectively. It is observed from Table 8A that a large part of occupational segregation is not reflected at the 1-digit level for both the total and the urban sectors and that the contribution of 2-digit within 1-digit as also the 'interaction' are not small or negligible. The picture, on the other hand, is significantly different as revealed in Table 8B. ***The contribution of the 'between' 2-digit level segregation are very close to the level of segregation at the 3-digit level and the 'within' segregation or the contribution of 3-digit within 2-digit levels is not only consistently lower than the 'interaction' but also is almost negligible.*** This implies and corroborates the earlier observation that an analysis of segregation at 2-digit level of occupational classification is quite satisfactory in the sense that further disaggregation does not add much to the results.

It would be interesting to see how the value of the Gini-index within each of the 1-digit and 2-digit level occupations varies. These results are presented in Tables 9A and 9B corresponding to Tables 8A and 8B respectively. It is important to notice from Table 9A that in occupations like 'Service Workers', 'Production and Related Workers, Transport Equipment Operators and Labourers' followed distantly by occupation 'Professional, Technical and Related Workers', the values of the index are considerably high in almost all the states, for both total and urban sectors, the Southern states dominating over the others in regard to the first two occupations. So far as Table 9B is concerned, we note that it will be extremely cumbersome to present the 'within' segregation values for each of the eighty-three 2-digit level occupations or occupational groups. We have, therefore, presented a distribution of these occupations by values of the 'within group' Gini segregation index. It is seen that not even 10 per cent of the occupations have value of the Gini segregation index greater than 0.5, an overwhelmingly large majority showing up a value of less than 0.3. ***This decomposition analysis therefore provides strong evidence to support for an analysis of occupational segregation by gender at the 2-digit level of classification and indicates that we need not really go for further disaggregation, as it does not add much insight into the phenomenon.***

### 5.2.2. Relative impact of occupations and industries in assessing the extent of segregation

We have applied the decomposition methodology described in section 4.1.2.2 to the Census data for 1991 on the selected states and for the urban and total sectors respectively. However, it is necessary to mention, at the outset about the nature of the data available and hence on the scope of analysis possible. As clear, for the purpose of this exercise we need two-way distributions of male and female workers by 'occupations' and 'industries' at the 2-digit level of classification. However, what is available in Census reports is two-way distribution by 'occupations' and 'industrial categories' (and not by industries). It is to be noted in this connection that 'industrial categories' and 'industries' are not identical categories of classification. There is large degree of correspondence at the 1-digit level of industrial classification though it is not one-to-one. Specifically, it is possible to identify industrial categories from the industrial classification at the 1-digit level but not completely the other way round. Thus, the two-way distributions are available for 1-digit, 2-digit and 3-digit levels of occupations but all for the same set of industrial categories.

The results of our empirical exercises relating to segregation in occupations versus industrial categories are presented state-wise in Table 10 for total sector[11] We note the following important findings from this table :

(1) The total segregation of the joint distribution of occupation and industry increases decreasingly when we move on from 1-digit to 2-digit and then from 2-digit to 3-digit levels of occupational classification.

(2) The same feature is noticed for 'between' segregation in case of occupations. However, 'between industries' segregation remains fixed, for reasons stated earlier. Comparison of 'between occupation' segregation and 'between industries' segregation is thus valid only at 1 digit level of classification where the former is found to be greater than latter. We can therefore say that at 1-digit level, female and male intensive categories are more clear-cut when we consider occupations rather than industries.

[11] The observations for total sector hold true for urban sectors of the states and therefore are not analyzed separately.

(3) We next consider 'within' segregation and 'interaction' and find these two continuously declining for occupations while increasing for industries as we move on to higher levels of disaggregation.

(4) Coming next to the main issue of our analysis in this section viz., which of industry and occupation is more important in explaining the overall level of segregation by gender, we first note that we are constrained to a great extent to do this, as discussed earlier. We can however analyze this issue in regard to industrial categories and occupations. Thus, considering first the joint distribution of occupational classification at 1-digit level and industrial categories, we observe that except for a few cases,[12] segregation 'within' occupations is higher than segregation 'within' industrial categories. However, for 2-digit and 3-digit levels of occupational classification, it is the other way round. It implies, as per the methodology described earlier that intensity of segregation and hence inequality in the distribution of the ratio of female to male workers across industrial categories within occupational divisions in higher than the same across occupational divisions within industrial categories. Hence, it is the industrial categories, which play greater role than occupations at 1-digit classification, in explaining labour market segregation by gender. Following the same methodology, it is clear that at 2-digit and 3-digit levels, the situation gets reverse where occupations and not industrial categories become more important in assessing overall segregation.

At the end, we would like to mention that despite getting constrained by the non-availability of proper data in analyzing the second issue of decomposition, we have carried it out with a hope in mind that if, in future, the relevant data become available then such analysis would determine which of industries and occupations are more important in explaining the overall level of segregation by gender in the Indian labour market and thereby help us in choosing proper policy formulation in this regard.

[12] Punjab and Haryana in the total sector while Bihar and Orissa in the urban sector.

## 5.3. Segregation in the light of gender domination

### 5.3.1. Relationship between segregation and domination by gender

We may now consider the above relationship as discussed in Section 4.1.3.2. together with the distribution of $F_i/M_i$ (Table 2) and attempt to explain the observed interstate variation in the intensity of Gini segregation indices (Table 3B). We find that the relatively backward states like Bihar and Uttar Pradesh[13] with very low value of (F/M) and hence an overall high male domination, show relatively uniform pattern of domination across occupations leading to low value of segregation. On the other hand, in relatively advanced states of Punjab and Haryana corresponding to almost same values of overall (F/M) as those of two aforementioned states, the distribution of $(F_i/M_i)$ reveals relatively high variability and consequently, a high level of segregation. In Kerala, intensity of overall male domination given by (F/M) is least pronounced. But here also we get a very high value of segregation. This is simply because of the relatively high non-uniformity in the pattern of domination across occupations.

### 5.3.2. Analysis of absolute and relative gender domination

The results on the distribution of the occupations in respect of the intensity of absolute gender domination following the scheme described in Section 4.1.3.1. are presented in Tables 11A and 11B for the population Census data of 1991. This analysis has been carried out for all the 1-digit, 2-digit and 3-digit levels of classification for the states and all-India, both for total (urban plus rural) and urban sectors.

Looking first at the **1-digit level**, we observe that in the majority of the states, only one (out of six) occupation is MMD while the remaining five are HMD, Bihar being the only state where all the six occupational divisions are HMD in both the sectors. If we consider the total sector only then there are a few other states viz., Uttar Pradesh, Rajasthan and Orissa, which are similar to Bihar in this respect. Interestingly, however, the Southern states, in particular Kerala, display a somewhat different picture as we find there a mixture of both HMD and MMD occupations.

[13] in its total sector.

Disaggregating the occupations further we get some more insights into the pattern and extent of gender domination. Thus, it is noticed, at both the 2-digit and the 3-digit levels of classifications, that there is an overwhelming majority of HMD occupations followed remotely by some MMD ones. Quite a good number of occupations, in fact, turn out to be CMD at the 3-digit level in a number of states, though the numbers of such occupations are different in different states. More specifically, unlike in the total sector, we find CMD occupations in almost all the states in the urban sector.

**Two** questions are likely to come up at this stage. **First**, one may be interested in identifying which particular occupations are male-dominated and which others are female-dominated, if at all, and also whether the sets of such occupations remain invariant across states or not. **Second,** and perhaps a more important question would be to examine the extent of male and female employment in different gender-dominated occupations. In what follows, we propose to investigate these questions.

To begin with, we take up the **first** question. In view of the finding that the male-dominated occupations are much higher in number, we do not intend to carry out the task of identifying such occupations across states, as it would unnecessarily make the study cumbersome. We, therefore, confine ourselves here to identifying the female-dominated occupation (Table 12A), however small they may be in number. It may be pointed out in this connection that, for the purpose of the present analysis, we would consider those occupations as having significant female domination, which are at least MFD in at least one of the states.

At the 1-digit level, as has been mentioned earlier, there does not exist any female-dominated occupation. For the sake of interest, however, one may mention that the sole MMD occupation in majority of the states is 'Professional, Technical and Related Workers'.

At the 2-digit level, we find only two HFD occupations. These are 'Tobacco prepares and Tobacco Product Makers' and 'Maids and Related House Keeping Service Workers, n.e.c'. These two occupations belong respectively to the broad occupational divisions viz. 'Production and Related Workers, Transport Equipment Operators and Labourers' and 'Service Workers'. Both these occupations are HFD in

Karnataka while in the remaining Southern states and Maharashtra in the West, one of these two turns out to be so.

Our next task would be to ascertain the position of these two occupations at the 2-digit level in other states. We observe that with some exceptions either or both sectors of eight major states these two occupations are MFD. Out of the remaining occupations, **nine** occupations are there which are **MFD is at least one state**. These are, (1) Nursing and other Medical Health Technicians, (2) Teachers, (3) Social Scientists and Related Workers and (4) Life Science Technicians in the occupational division '**Professional, Technical and Related Workers'**; (5) Stenographers, Typists and Card and Tape Punching Operators in the division '**Clerical and Related Workers**'; (6) Housekeepers, Matrons and Stewards, and (7) Building Caretakers, Sweepers, Cleaners and Related Workers in the division '**Service Workers**'; (8) Spinners, Weavers, Knitters, Dyers and Related Workers and (9) Production and Related Workers n.e.c in the division **'Production and Related Workers, Transport Equipment Operators and Labourers'**.

Of the occupations listed above, the first **two** are the most frequently occurring MFD occupations. Rest **seven** occupations have different occurrences. Among all the states Kerala shows maximum number of MFD occupations. In fact, it has at least one MFD occupation in all the four broad occupational divisions mentioned above. Incidentally, these divisions were MMD in Kerala at the 1-digit level of classification.

This brings us to the task of identifying the list of female dominated occupations at the 3-digit level (Table 12B). The following points may be noted in this connection.

(a) There are altogether **eleven** occupations, which can be designated as HFD in at least one state. These are:

(1) Nurses, (2) Midwives and Health Visitors in the group **'Nursing and other Medical and Health Technicians'**; (3) Primary Teachers and (4) Pre-primary Teachers in the group **'Teachers'**; (5) Ayaha, Nurse, Maids and (6) Domestic Servants in the group **'Maids and Related House Keeping Service Workers, n.e.c.'**; (7) Fibre Prepares in the group **'Spinners, Weavers, Knitters, Dyers and Related Workers,** (8) Carcass Lifters in the group **'Tanners, Fell mongers and Pelt Dressers'**, (9) Bidi Makers in **'Tobacco**

**Prepares and Tobacco Product Makers'** (10) Mat Weavers and 11) Leaf Plate Makers in the group **'Production and Related Workers, n.e.c.'**

(b) Largest HFD occupation is '**Nurses**' and it is observed in all India and in all the states barring Uttar Pradesh where it is MFD.

(c) Besides '**Nurses**' another two HFD occupations, found in a number of states. are '**Ayaha, Nurse and Maids**' and '**Pre-primary Teachers**'. Of these two occupations again, while the former is MFD in all the remaining states except Bihar, the latter is such except in Uttar Pradesh[14].

(d) '**Midwives and Health Visitors**' is HFD in Punjab and Maharashtra but MFD in all other states.

(e) '**Primary Teachers**' is HFD in Maharashtra only while MFD in other states except Uttar Pradesh, Rajasthan and West Bengal. Also, in a number of states where it is MFD, it is such in the urban sector only.

(f) '**Bidi Makers**' is HFD in Maharashtra, Karnataka and Kerala while MFD in two remaining southern states and also four other states. The states are Uttar Pradesh, Rajasthan, Madhya Pradesh and West Bengal.

(g) Of the remaining five HFD occupations, '**Carcass Lifters**' is found only in Andhra Pradesh and in none of the other states it is even MFD. The remaining four occupations are noticed in Kerala along with one or more southern states. In fact, if we consider the Southern states together, then we may say that these four occupations are at least MFD in all of them. However, '**Domestic Servants**' and '**Mat Weavers**' are MFD in a few more states like West Bengal, Madhya Pradesh, and Gujarat and also in all-India.

A perusal of the list of the female-dominated occupations at both 2-digit and 3-digit levels brings out certain interesting features in regard to their nature. Such findings, it may be pointed out, broadly vindicate those made by Anker (1998) in his study in this regard. These are as follows:

(1) Female-dominated occupations are very consistent with typical gender stereotypes such as (i) supposedly caring nature (Nurses, Ayaha and Maids; Midwives and Health Visitors; Pre-primary and Primary Teachers, Flight

[14] For brevity, we have considered either total or urban sectors while making the list of HFD/MFD occupations. In other words, inter-sectoral variations have been ignored here.

Navigators) (ii) skill (and experience) at household related work (Housekeepers, Matrons and Stewards; Sweepers, Cleaners and Related Workers), (iii) greater manual dexterity, especially with fingers (Spinners, Weavers, Knitters, Dyers and Related Workers; Bidi Makers; Stenographers and Steno Typists) and so on.

(2) There exists considerable interstate variation in this regard. States like Kerala, Punjab, Haryana and to an extent Maharashtra behave in a somewhat similar manner and show, separately / as a group, a number of female dominated occupations, particularly at the 3-digit level, which are not observed elsewhere as such. Thus we may mention that 'Flight Navigator' is MFD only in Kerala. In fact, Kerala shows maximum number of female dominated occupations. Similarly, considering the occupations at 3-digit levels within the 2-digit level occupation viz., 'Teachers', one finds that all but 'University and College Teachers' are MFD in almost all the aforementioned states and in Tamil Nadu. However, despite the spatial heterogeneity, one point needs to be stressed here. The union of all the female-dominated occupations, irrespective of the level of aggregation, belongs to the four broad occupational divisions viz., 'Professional, Teachnical and Related Workers', 'Production and Related Workers, Transport Equipment Operators and Labourers', 'Service Workers' and 'Clerical and Related Workers'.

(3) Such occupations, in general, tend to have relatively lower pay, lower status and less decision-making authority than the types of occupations in which male workers tend to be located, particularly within a broad occupational division or group. As an example let us consider the occupational division viz., 'Professional, Technical and Related Workers' where females are over-represented in all the states under study. Within this broad occupation the two largest female-dominated occupations viz., 'Nurses' and 'Pre-primary Teachers' are found to have lesser prestige, pay and decision-making power compared to allied professions of 'Physicians and Surgeons' and those of teachers of higher education respectively. Similar examples may be given when we consider majority of other female-dominated occupations within the purview of different occupational divisions/groups.

We now take up the **second** important question of our analysis of absolute gender domination viz., the extent of male and female employment in different gender-dominated occupations. In doing so, we have considered each of 1-,2- and 3-digit levels of occupational classifications. For brevity, however, we confine ourselves exclusively to the 2-digit level analysis. It may be mentioned for the total sector (Table 13) that a very large chunk of male employment is, as expected, accounted for by the HMD and MMD occupations taken together in all the states, though the importance of the former is much higher in this regard. Moreover, the percentage of male employment generally decreases as the intensity of male domination reduces. This would in turn imply that there would be very little male employment in female dominated occupations, however small the number of such occupations might be. On the other hand, so far as the distribution of female workers in concerned, the situation is quite different from that of the males. In this case, in most of the states, very large percentage of females is employed in HMD and MMD occupations. The states, which form the exceptions, are Punjab, Haryana and Kerala. However, while at the 3-digit level, Punjab and Haryana share, to a large extent, the features of the other states, Kerala maintains the same characteristics viz., the HMD and MMD occupations together employ a little over 40 per cent of the female workers[15].

One point, which comes out of this analysis, clearly is that the percentage of female employment in female-dominated occupations is, as a whole very small, though higher than the corresponding percentages of male employment in such occupations. This is quite an expected observation for country like ours where female work participation rates are significantly low. This finding broadly corroborates those made by Anker (1998) in his study. His comments seem to be very pertinent in this regard. "The non-agricultural labour market is such a male world in countries with low female participation rates that a sizeable proportion of women find themselves working in a 'male' occupation."

We now consider the analysis of **relative domination**. We may recall from the results in section 5.1.1.1.that in majority of the states, females are over-represented in occupational divisions viz., 'Professional, Technical and Related

[15] The above results hold, by and large, for the urban sector as well and hence are not presented separately.

Workers', 'Production and Related Workers, Transport Equipment Operators and Labourers' and 'Service Workers' while in remaining occupational divisions the picture is the other way round. At the 2-digit level of classification, we find that (Table 14), in a large number of states, the representation ratio is less than even 0.5 in almost 50 per cent of occupations. Also, females are found to be over-represented on an average, in 20 out of 83 occupations. Interestingly, however, majority of such occupations had been highly male-dominated ones – a fact that becomes clear when we observe the two-way distribution of 83 occupations by absolute and relative gender domination. As illustrative example, we present here such distribution only for Punjab (total sector).

**Table 15 : Absolute versus Relative Gender Domination: Punjab**

| Absolute gender domination | Distribution of 2-digit occupations by relative gender domination | | | | | |
|---|---|---|---|---|---|---|
| | 0-0.5 | 0.5-1.0 | 1.0-2.0 | 2.0-4.0 | 4.0 & Above | All |
| HMD | 41 | 18 | 9 | 7 | 2 | 77 |
| MMD | - | - | 1 | 2 | 1 | 4 |
| MFD | - | - | 2 | - | - | 2 |
| All | 41 | 18 | 12 | 9 | 3 | 83 |

The brief analysis of relative gender domination though speaks of slight betterment of females' position in the labour market compared to the overall situation, does not provide further insight to understand proper functioning of this market. For this we stick to the results of the analysis of absolute gender domination carried out so far. And, in conclusion we may say that female workers have a very limited set of female-dominated occupations. Ironically, these are the occupations where they face little, if any, competition from men probably because these tend to have lower pay and status. Furthermore, despite interstate variations, there exists a great similarity in regard to the nature of large female-dominated occupations, which are consistent with the typical stereotyped traits often attributed to women. Anker (1998) thus rightly points out, "... the pernicious sex stereotyping of all women regardless of their individual abilities or interests needs to changed if women are to enter into new non-traditional occupations, and the world is to move towards gender equality in the labour market."

## 5.4. Segregation and development

### 5.4.1. Inter-temporal changes in labour market segregation

So far we have confined ourselves to the analysis of segregation on the basis of 1991 Census data. Let us now consider the change in the labour market segregation over time. For this, we have calculated the Gini segregation indices for selected major states of India using 1981 Census data. This will help us in understanding whether there has been any change in absolute sense i.e., values of segregation indices for the major states in India and/or in the relative sense i.e., rankings of the states on the basis of values of indices during the period 1981-91.

Considering the Table 16 where values of Gini segregation indices calculated on the basis of 1981 and 1991 Census for both total and urban sectors of the states are presented, we note the following features:

(1) In 1981, intensity of occupational segregation by gender was much less pronounced for Orissa, Maharashtra, and Rajasthan in the total sector while in the urban sector it was again Maharashtra along with Gujarat and Madhya Pradesh where the same feature was noticed. Values of segregation indices, on the other hand, were much higher for Punjab, Haryana, Kerala and to an extent West Bengal in both the sectors.

(2) During the period 1981-91, extent of segregation remained more or less at the same level in the states where it had already been very much pronounced, decreased to a much less extent in a number of states but considerably in Bihar and Uttar Pradesh.

(3) In terms of both overall and sectoral rank correlation coefficients for 1981 and 1991 (Table 17), these changes appear to be marginal and statistically insignificant.

### 5.4.2. Relationship between segregation and development

Before delving further into the analysis of the relationship between segregation and development (Tables 18A and 18B), we feel it worthwhile to try to assess the performance of the states, from the perspective of development during 1981 – 1991. While considering this issue we may refer to one of our earlier studies (Mukherjee and Sen Gupta 2000) in this regard. Results of this study indicate that in

early eighties (Table 18B) the states can be classified, roughly speaking, into four groups in respect of their performance on the bases of the selected development indicators[16]. The first group comprising Bihar, Uttar Pradesh, Madhya Pradesh and Orissa can be termed as worst possible group of states while Punjab and Maharashtra are clearly the best though both these states perform badly in respect of slum population. Rajasthan is a little better than the worst group followed by Andhra Pradesh on the better side. In between the best group and Andhra Pradesh lie the other states. In fact, Tamil Nadu and West Bengal are really in the middle most positions in the ranking of all the fourteen states. Strikingly enough, Kerala perform very well in respect of health and education but very poorly in regard to the supply of drinking water and urbanization.

Coming next to the situation prevailing in the early nineties (Table 18A), it is observed that the states can again be classified into the same four groups as in the early eighties. Also, the other features remain more or less the same.

We now pass on to examining the relationship between the values of Gini segregation index for the states and the selected indicators of development in the early ninities. As a first step, these are presented in the form of scatter diagrams in Figure 2. It may be noted that these diagrams are very much revealing in exhibiting the relationship. Thus one may notice that the relationship between Gini segregation index and each of infant mortality rates, life expectancy, percentage of households having pucca house, percentage of households having electricity, per capita net state domestic product and percentage below poverty are very close. On the other hand, degree of urbanization, percentage of slum population, percentage of households having drinking water show up very poor relationship with Gini segregation index. Overall and female literacy rates indicate a moderate degree of association.

To sharpen our analysis we have next calculated the product moment correlation coefficients between Gini segregation index and the indicators of

[16] The selected indicators are per capita net state domestic product, overall and female literacy rates, levels of poverty, life expectancy, availability of basic amenities like pucca house, drinking water, electricity; infant mortality rate, degree of urbanization and percentage of slum population. Instead of looking at the relationship between the degree of segregation and the level of overall development as indicated by per capita net state domestic product exclusively it seems justified to look at its relation with all these indicators of development.

development, considered pair wise at a time. These results are presented in column 3 of Table 19A. The tests of significance indicates that the correlation between Gini segregation index and each of infant mortality rates, life expectancy, per capita state domestic product, percentage of households having pucca house, percentage of households having electricity, percentage below poverty are significant at 5 per cent level while the same with respect to overall and female literacy rates are significant at 10 per cent level. This corroborates our observations on the basis of the scatter diagrams.

The same exercise is repeated for early eighties and the results are presented in the column 2 of the same table. We notice that majority of the indicators which were significant at 5 per cent level in the early nineties are found to be such in early eighties as well. To be more precise, these are life expectancy, percentage below poverty, percentage of households having electricity and per capita net state domestic product. Intuitively, one may argue that these factors have significant influence on female work participation relative to males' thereby affecting labour market segregation by gender where females' representation is rather very low compared to males' in the traditional societies like ours.

Given the above observations, it would be interesting to see further the relative positions of the states in terms of the Gini segregation index vis-à-vis the indicators chosen. For this purpose, we have obtained the rank correlation coefficients of the rankings of the states by the values of Gini segregation index and the indicators of development. These results for the same two periods have been presented in Table 19B.

It may be noted that the sign of the rank correlation coefficients as shown by the figures of the column 3 of this table are all negative. While in three of these cases, viz., infant mortality rates, percentage of population below poverty and percentage of slum population, a negative sign indicates a disagreement in the rankings of the states since they have been ranked by the values of the Gini segregation index as well as those of the three indicators in the same (ascending) order, in other cases, a negative sign actually implies an agreement in the ranking because in these cases, the states have been ranked differently. To be more precise, in the latter cases the states having the lowest value of Gini segregation index has been assigned the rank 'one' while the state having the highest value of, say, life expectancy, has been given the first rank.

So far as the strength of the agreement or disagreement is concerned, we find that the rank correlation coefficients between Gini segregation index and each of life expectancy, percentage of households having electricity, per capita net state domestic product and percentage of population below poverty are significant at 5 per cent level while the same with respect to percentage of households having pucca house is significant at 10 per cent level.

Similar exercise based on the data for the early eighties indicates (column 2 of Table 19B) more or less the same observations.

The conclusion, which emerges out of the above analysis, seems not to lend any strong empirical support to one of the major hypotheses of this study that the degree of segregation by gender in the labour market decreases with the rise in the level of development. In fact our analysis suggests that such relationship, even when exists, is not instantaneous by any means. At most, it can be a lagged one, which calls for further research.

## 6. Summary and Conclusions

In this study, we have made an attempt to measure the extent, and assess the nature of non-agricultural occupational segregation by gender in Indian labour market. The problem assumes great importance from the point of view of efficient functioning of the labour market and discrimination against women in particular.

The degree of segregation has been measured by using four different well-known indices of segregation viz., Duncan and Duncan Index, Gini Segregation Index, Kakwani Index and Hutchens' Square Root Index. However, for analytical convenience, we have mostly used the Gini segregation index. We have considered the total and urban sectors for the states under study, primarily using population Census data for 1991. In order to understand the inter-temporal variation, 1981 Census data have also been used. To get a feel for the recent periods, we have also used data available from the NSSO, in a very limited way.

A number of exercises have been carried out for a proper and comprehensive understanding of the nature of occupational segregation by gender in India, including an attempt to provide an explanation of the existence of segregation in terms of the distribution of the ratio of female to male workers $(F_i/M_i)$. These were preceded by

an analysis of the occupational structure and representation ratios. Later, we have carried out a decomposition analysis to understand (i) the effect of aggregation of occupational classification on the intensity of segregation and (ii) relative importance of industries and occupations in assessing overall level of segregation. To get a more insightful perspective of the labour market we have considered an analysis what is called 'gender domination' in the labour market. It is this aspect, which has led to the concept of gender stereotyping of occupations and brought up a number of other interesting related issues. Finally, we have analyzed the relationship between intensity of segregation and development, using a number of socio-economic and demographic indicators, considered relevant in this regard.

We may now summarize the major findings of the study.

1. At the 1-digit level, the occupations, where females are over-represented, are 'Professional, Technical and Related Workers' and 'Service Workers' in all the states while 'Production and Related Workers, Transport Equipment Operators and Labourers' in a majority of states.
2. Rankings of the states by the Gini segregation index and those by other indices are in high agreement.
3. Intensity of segregation increases to a great extent when we go from the 1-digit to the 2-digit level of classification but not so much when disaggregation of data from the 2-digit to the 3-digit level is considered. This is why; we have carried out most of our analysis at the 2-digit level.
4. There exists considerable amount of occupational segregation by gender in all the states. Significant inter-state variation in the level of segregation is noticed. We understand that gender domination is a necessary but not a sufficient condition for segregation. That is why the relatively backward states like Bihar and Uttar Pradesh with very low value of (F/M) and hence an overall high male domination, show relatively uniform pattern of such domination across occupations leading to low value of segregation. On the other hand, in relatively advanced states of Punjab and Haryana corresponding to almost same values of overall (F/M) as those of two aforementioned states, the distribution of $(F_i/M_i)$ reveals relatively wide variation and consequently, a high level of segregation. In Kerala, intensity of overall male domination given by (F/M) is least pronounced. But here also we

get a very high value of segregation. This is simply because of the relatively high non-uniformity in the pattern of domination across occupations.

5. So far as the inter-temporal variation is concerned, those states, which had higher levels of segregation in 1981, maintained their relative positions in 1991 also. However, in majority of the states, in both their total and urban sectors, intensity of segregation is found to diminish during 1981-91. As for the inter-sectoral variation, it is noticed that intensity of segregation is higher in the urban compared to that in the total and hence in the rural sector.

6. In decomposition analysis the overall segregation is decomposed into 'within' and 'between' occupational (industrial) segregation. Of course, then we have an interaction term as well. Here a few observations are in order:

   (i) The contribution of the 'between' the 2-digit level segregation is very close to the overall segregation at the 3-digit level.

   (ii) The extent of the 3-digit level segregation within the 2-digit levels is considerably lower than interaction and is of negligible magnitude.

   Observations (i) and (ii) together justify our decision of carrying out the analysis of segregation at the 2-digit level of occupational classifications.

7. It is the industrial categories, which play a greater role than occupations at 1-digit level of classification, in explaining labour market segregation by gender. However, at the 2-digit and 3-digit levels of occupational classification, the situation gets reverse where occupations and not industrial categories become more important in assessing overall segregation.

8. Female workers have a very limited set of female-dominated occupations — occupations where they face little, if any, competition from men. Ironically, these tend to have lower pay and social status and hence lower decision-making power. Furthermore, despite interstate variation, there exists a great similarity in regard to large female-dominated occupations, which are consistent with the typical stereotyped traits often attributed to women.

9 There does not seem to exist, by and large, an inverse relationship between segregation index and selected indicators of development. In other words, higher levels of development do not necessarily imply lower intensity of segregation and vice-versa.

10. Results on the basis of NSS data reveal that (a) the values of segregation indices at the 2-digit level are considerably higher compared to the 1-digit level figures. (b) This is more so for the urban sector than for the rural sector. These vindicate the findings obtained on the basis of Census data. However, so far as the variation over time is concerned, there is no clear-cut pattern and in fact, the picture obtained for the two sectors are quite different. If we confine ourselves to the decade of the nineties, we find that there has been a fall in the degree of segregation in the rural sector while for the urban sector it is the other way round.

In conclusion, the study reveals that intensity of gender-bias in respect of segregation in labour market is of great concern. Though the situation is showing a tendency towards marginal improvement over the last two decades, the absolute magnitude of the problem is still alarming and calls for suitably designed policy interventions. The target of such measures should be a reduction in the level of occupational segregation in a very special manner. We may explain this below.

We understand from our study that gender domination across occupations is a necessary but not a sufficient condition for segregation. Also, we know that overall male-domination prevails in the Indian labour market. Hence, in such a situation, a realistic approach to lower the intensity of gender discrimination would be to raise the ratio of overall (F/M), and simultaneously aim at a more uniform distribution of $(F_i/M_i)$ across occupations. While the improvement in $(F/M)$ would enhance FWPR, and lead to a decline in overall gender inequality, ceteris paribus; the lowering of the variability of $(F_i/M_i)$ would correct gender stereotyping observed in a majority of occupations. In this way, it would not only expose the labour market to relatively less risk and vulnerability from the point of view of efficiency but would also lead to a reduction in the intensity of segregation from the perspective of gender discrimination.

**Table 1A : Percentage Distribution of Workers by Gender, Broad Occupational Divisions and States : Total Sector**

| States | Gender | Percentage Distribution of Workers by Broad Occupational Divisions | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | A | B | C | D | E | F | Total |
| (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) |
| **EASTERN** | | | | | | | | |
| Bihar | Male | 14.9 | 2.5 | 11.9 | 19.9 | 9.7 | 41.1 | 100 |
| | Female | 30.4 | 0.8 | 3.9 | 9.3 | 9.9 | 45.8 | 100 |
| Orissa | Male | 14.8 | 3.5 | 12.7 | 19.1 | 8.0 | 41.9 | 100 |
| | Female | 22.1 | 0.6 | 3.6 | 11.7 | 10.3 | 51.7 | 100 |
| West Bengal | Male | 7.8 | 2.9 | 11.4 | 22.2 | 6.4 | 49.3 | 100 |
| | Female | 17.6 | 0.6 | 6.5 | 6.9 | 16.0 | 52.4 | 100 |
| **WESTERN** | | | | | | | | |
| Gujarat | Male | 6.9 | 3.6 | 10.2 | 17.2 | 6.3 | 55.7 | 100 |
| | Female | 29.9 | 1.0 | 8.5 | 9.6 | 12.2 | 38.8 | 100 |
| Maharastra | Male | 8.6 | 4.4 | 12.0 | 16.6 | 8.5 | 49.9 | 100 |
| | Female | 21.8 | 1.6 | 12.7 | 10.5 | 12.9 | 40.5 | 100 |
| Rajasthan | Male | 11.4 | 2.6 | 9.9 | 19.0 | 7.8 | 49.2 | 100 |
| | Female | 27.9 | 1.1 | 4.6 | 6.1 | 10.6 | 49.7 | 100 |
| **CENTRAL** | | | | | | | | |
| Madhya Pradesh | Male | 10.6 | 4.8 | 10.0 | 15.9 | 8.6 | 50.0 | 100 |
| | Female | 18.8 | 1.1 | 4.5 | 8.0 | 8.7 | 58.9 | 100 |
| **NORTHERN** | | | | | | | | |
| Haryana | Male | 10.1 | 2.9 | 11.6 | 19.3 | 8.6 | 47.4 | 100 |
| | Female | 45.7 | 0.9 | 9.7 | 3.5 | 10.6 | 29.6 | 100 |
| Punjab | Male | 8.2 | 1.8 | 10.1 | 22.3 | 7.1 | 50.5 | 100 |
| | Female | 51.7 | 0.7 | 12.1 | 4.4 | 9.7 | 21.4 | 100 |
| Uttar Pradesh | Male | 10.0 | 1.7 | 9.8 | 22.6 | 7.6 | 48.2 | 100 |
| | Female | 25.4 | 0.7 | 4.4 | 9.1 | 11.8 | 48.7 | 100 |
| **SOUTHERN** | | | | | | | | |
| Andhra Pradesh | Male | 8.2 | 2.6 | 10.0 | 19.6 | 10.7 | 48.8 | 100 |
| | Female | 11.1 | 0.4 | 3.2 | 12.5 | 19.7 | 53.2 | 100 |
| Karnataka | Male | 9.1 | 3.5 | 10.5 | 19.3 | 8.7 | 48.9 | 100 |
| | Female | 15.3 | 0.9 | 6.6 | 9.5 | 10.6 | 57.1 | 100 |
| Kerala | Male | 9.4 | 4.2 | 9.6 | 19.0 | 9.0 | 48.8 | 100 |
| | Female | 24.3 | 1.1 | 8.6 | 4.5 | 11.7 | 49.7 | 100 |
| Tamil Nadu | Male | 7.4 | 5.5 | 10.1 | 17.8 | 7.9 | 51.4 | 100 |
| | Female | 16.0 | 1.0 | 6.3 | 7.9 | 14.4 | 54.4 | 100 |
| **India** | Male | 9.5 | 3.5 | 10.9 | 19.3 | 8.3 | 48.4 | 100 |
| | Female | 21.0 | 1.1 | 7.5 | 8.9 | 13.4 | 48.1 | 100 |

Note: **A:** Professional, Technical and Related Workers; **B:** Administrative, Executive and Managerial Workers; **C:** Clerical and Related Workers; **D:** Sales Workers **E:** Service Workers; **F:** Production and Related Workers, Transport Equipment Operators and Labourers

Source: General Economic Tables, Series 1-India, Table B-19, 1991 Census.

**Table1B: Proportion of Female Workers in Total Workers and Representation Ratios by Broad Occupational Divisions and States: Total Sector**

| States | $F_i/P_i$ R.R. | Broad Occupational Divisions | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | A | B | C | D | E | F | All |
| (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) |
| **EASTERN** | | | | | | | | |
| Bihar | $F_i/P_i$ | 14.6 | 2.7 | 2.7 | 3.7 | 7.9 | 8.5 | 7.7 |
| | R.R. | 1.887 | 0.346 | 0.345 | 0.484 | 1.018 | 1.104 | 1.000 |
| Orissa | $F_i/P_i$ | 18.7 | 2.5 | 4.2 | 8.5 | 16.4 | 15.9 | 13.3 |
| | R.R. | 1.405 | 0.185 | 0.314 | 0.644 | 1.236 | 1.197 | 1.000 |
| West Bengal | $F_i/P_i$ | 22.6 | 2.7 | 6.9 | 3.8 | 24.3 | 12.0 | 11.4 |
| | R.R. | 1.982 | 0.242 | 0.603 | 0.335 | 2.132 | 1.055 | 1.000 |
| **WESTERN** | | | | | | | | |
| Gujarat | $F_i/P_i$ | 29.7 | 2.6 | 7.5 | 5.2 | 15.8 | 6.3 | 8.9 |
| | R.R. | 3.354 | 0.290 | 0.843 | 0.582 | 1.783 | 0.716 | 1.000 |
| Maharastra | $F_i/P_i$ | 28.8 | 5.7 | 14.4 | 9.1 | 19.6 | 11.5 | 13.8 |
| | R.R. | 2.093 | 0.410 | 1.045 | 0.663 | 1.423 | 0.833 | 1.000 |
| Rajasthan | $F_i/P_i$ | 16.5 | 3.3 | 3.6 | 2.5 | 9.8 | 7.5 | 7.5 |
| | R.R. | 2.214 | 0.448 | 0.480 | 0.340 | 1.317 | 1.009 | 1.000 |
| **CENTRAL** | | | | | | | | |
| Madhya Pradesh | $F_i/P_i$ | 22.2 | 3.6 | 6.7 | 7.5 | 13.9 | 15.9 | 13.8 |
| | R.R. | 1.605 | 0.261 | 0.487 | 0.541 | 1.004 | 1.149 | 1.000 |
| **NORTHERN** | | | | | | | | |
| Haryana | $F_i/P_i$ | 25.3 | 2.3 | 5.9 | 1.3 | 8.5 | 4.5 | 7.0 |
| | R.R. | 3.625 | 0.329 | 0.845 | 0.191 | 1.215 | 0.641 | 1.000 |
| Punjab | $F_i/P_i$ | 31.7 | 2.7 | 8.0 | 1.4 | 9.1 | 3.0 | 6.8 |
| | R.R. | 4.641 | 0.398 | 1.176 | 0.206 | 1.338 | 0.442 | 1.000 |
| Uttar Pradesh | $F_i/P_i$ | 15.5 | 2.8 | 3.1 | 2.8 | 10.1 | 6.8 | 6.7 |
| | R.R. | 2.296 | 0.417 | 0.460 | 0.419 | 1.495 | 1.009 | 1.000 |
| **SOUTHERN** | | | | | | | | |
| Andhra Pradesh | $F_i/P_i$ | 24.8 | 3.7 | 7.2 | 13.4 | 30.9 | 20.9 | 19.6 |
| | R.R. | 1.266 | 0.190 | 0.367 | 0.683 | 1.580 | 1.071 | 1.000 |
| Karnataka | $F_i/P_i$ | 28.2 | 5.8 | 12.8 | 10.3 | 22.1 | 21.4 | 18.9 |
| | R.R. | 1.491 | 0.305 | 0.674 | 0.546 | 1.168 | 1.132 | 1.000 |
| Kerala | $F_i/P_i$ | 43.1 | 7.0 | 20.9 | 6.6 | 27.6 | 23.0 | 22.7 |
| | R.R. | 1.898 | 0.310 | 0.923 | 0.289 | 1.218 | 1.014 | 1.000 |
| Tamil Nadu | $F_i/P_i$ | 32.8 | 4.0 | 12.6 | 9.2 | 29.5 | 19.4 | 18.5 |
| | R.R. | 1.770 | 0.215 | 0.678 | 0.494 | 1.589 | 1.047 | 1.000 |
| **India** | $F_i/P_i$ | 25.1 | 4.4 | 9.4 | 6.5 | 19.7 | 13.1 | 13.2 |
| | R.R. | 1.908 | 0.332 | 0.718 | 0.493 | 1.495 | 0.995 | 1.000 |

**Notes:** (1) Fi and Pi respectively represent female and total workers in i-th occupational division

(2) R.R. represents representation Ratio.

**Source :** Same as in Table 1A.

**Table 2 : Summary Measures of the Distribution of $F_i/M_i$ on the Basis of 2-digit Level of Occupational Classification by States**

| STATES | T U | MEAN | DISPERSION | DISPER-U | DISPER-L | SKEWNESS | KURTOSIS |
|---|---|---|---|---|---|---|---|
| (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
| **EASTERN** | | | | | | | |
| Bihar | T | 0.084 | 0.093 | 0.069 | 0.000 | 0.369 | 0.374 |
| | U | 0.072 | 0.086 | 0.045 | 0.001 | 0.256 | 0.265 |
| Orissa | T | 0.153 | 0.175 | 0.107 | 0.000 | 0.304 | 0.306 |
| | U | 0.114 | 0.146 | 0.104 | 0.000 | 0.353 | 0.356 |
| West Bengal | T | 0.128 | 0.172 | 0.105 | 0.001 | 0.302 | 0.308 |
| | U | 0.101 | 0.138 | 0.085 | 0.001 | 0.302 | 0.310 |
| **WESTERN** | | | | | | | |
| Gujarat | T | 0.097 | 0.120 | 0.067 | 0.001 | 0.274 | 0.286 |
| | U | 0.094 | 0.118 | 0.060 | 0.002 | 0.241 | 0.262 |
| Maharastra | T | 0.160 | 0.185 | 0.154 | 0.001 | 0.415 | 0.418 |
| | U | 0.156 | 0.188 | 0.165 | 0.001 | 0.436 | 0.442 |
| Rajasthan | T | 0.081 | 0.099 | 0.057 | 0.001 | 0.284 | 0.290 |
| | U | 0.084 | 0.113 | 0.069 | 0.001 | 0.304 | 0.310 |
| **CENTRAL** | | | | | | | |
| Madhya Pradesh | T | 0.160 | 0.195 | 0.137 | 0.000 | 0.349 | 0.351 |
| | U | 0.140 | 0.178 | 0.118 | 0.001 | 0.332 | 0.335 |
| **NORTHERN** | | | | | | | |
| Haryana | T | 0.075 | 0.107 | 0.067 | 0.000 | 0.311 | 0.314 |
| | U | 0.085 | 0.127 | 0.083 | 0.000 | 0.322 | 0.325 |
| Punjab | T | 0.073 | 0.111 | 0.072 | 0.000 | 0.321 | 0.324 |
| | U | 0.078 | 0.121 | 0.083 | 0.000 | 0.341 | 0.344 |
| Uttar Pradesh | T | 0.072 | 0.083 | 0.038 | 0.001 | 0.225 | 0.235 |
| | U | 0.068 | 0.087 | 0.049 | 0.001 | 0.277 | 0.285 |
| **SOUTHERN** | | | | | | | |
| Andhra Pradesh | T | 0.243 | 0.316 | 0.224 | 0.000 | 0.354 | 0.355 |
| | U | 0.171 | 0.223 | 0.149 | 0.001 | 0.331 | 0.335 |
| Karnataka | T | 0.234 | 0.302 | 0.155 | 0.007 | 0.245 | 0.268 |
| | U | 0.197 | 0.253 | 0.130 | 0.004 | 0.249 | 0.264 |
| Kerala | T | 0.293 | 0.413 | 0.218 | 0.002 | 0.262 | 0.267 |
| | U | 0.268 | 0.371 | 0.160 | 0.006 | 0.208 | 0.224 |
| Tamil Nadu | T | 0.228 | 0.275 | 0.153 | 0.003 | 0.273 | 0.284 |
| | U | 0.186 | 0.228 | 0.120 | 0.003 | 0.256 | 0.269 |
| **India** | T | 0.152 | 0.181 | 0.093 | 0.002 | 0.252 | 0.264 |
| | U | 0.133 | 0.162 | 0.087 | 0.002 | 0.264 | 0.276 |

**Notes:** (1) T: Total sector; U: Urban sector.

(2) DISPER-U : Dispersion (Upper); DISPER-L : Dispersion (Lower).

**Source:** Same as in Table 1A.

**Table 3A : Indices of Segregation at 1-digit Level of Occupational Classification by States**

| STATES | Segregation Indices at 1-digit Level | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Total Sector | | | | Urban Sector | | | |
| | DDI | SQRI | KI | Gs | DDI | SQRI | KI | Gs |
| (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) |
| **EASTERN** | | | | | | | | |
| Bihar | 0.204 | 0.038 | 0.020 | 0.283 | 0.331 | 0.072 | 0.045 | 0.405 |
| Orissa | 0.194 | 0.032 | 0.022 | 0.226 | 0.287 | 0.058 | 0.050 | 0.360 |
| West Bengal | 0.225 | 0.050 | 0.039 | 0.326 | 0.394 | 0.106 | 0.095 | 0.470 |
| **WESTERN** | | | | | | | | |
| Gujarat | 0.289 | 0.063 | 0.061 | 0.337 | 0.331 | 0.080 | 0.075 | 0.400 |
| Maharastra | 0.183 | 0.027 | 0.030 | 0.237 | 0.268 | 0.045 | 0.050 | 0.316 |
| Rajasthan | 0.197 | 0.044 | 0.025 | 0.305 | 0.287 | 0.068 | 0.048 | 0.387 |
| **CENTRAL** | | | | | | | | |
| Madhya Pradesh | 0.171 | 0.026 | 0.021 | 0.221 | 0.192 | 0.039 | 0.037 | 0.290 |
| **NORTHERN** | | | | | | | | |
| Haryana | 0.376 | 0.110 | 0.080 | 0.478 | 0.485 | 0.166 | 0.129 | 0.597 |
| Punjab | 0.481 | 0.162 | 0.131 | 0.581 | 0.548 | 0.200 | 0.165 | 0.643 |
| Uttar Pradesh | 0.200 | 0.042 | 0.022 | 0.302 | 0.304 | 0.075 | 0.048 | 0.404 |
| **SOUTHERN** | | | | | | | | |
| Andhra Pradesh | 0.162 | 0.027 | 0.029 | 0.225 | 0.193 | 0.034 | 0.036 | 0.272 |
| Karnataka | 0.163 | 0.021 | 0.023 | 0.197 | 0.155 | 0.030 | 0.033 | 0.247 |
| Kerala | 0.185 | 0.048 | 0.060 | 0.295 | 0.277 | 0.062 | 0.082 | 0.369 |
| Tamil Nadu | 0.181 | 0.034 | 0.038 | 0.264 | 0.177 | 0.041 | 0.043 | 0.283 |
| **India** | 0.166 | 0.030 | 0.028 | 0.257 | 0.250 | 0.051 | 0.050 | 0.333 |

**Note:** DDI - Duncan and Duncan Index.

SQRI - Square Root Index.

KI - Kakwani Index.

$G_S$ - Silber's Gini Segregation Index.

**Source:** Same as in Table 1A.

**Table 3B : Indices of Segregation at 2-digit Levels of Occupational Classification by States**

| STATES | Segregation Indices at 2-digit Level | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Total Sector | | | | Urban Sector | | | |
| | DDI | SQRI | KI | Gs | DDI | SQRI | KI | Gs |
| (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) |
| **EASTERN** | | | | | | | | |
| Bihar | 0.436 | 0.136 | 0.095 | 0.558 | 0.477 | 0.162 | 0.118 | 0.600 |
| Orissa | 0.449 | 0.151 | 0.135 | 0.572 | 0.504 | 0.189 | 0.177 | 0.642 |
| West Bengal | 0.524 | 0.212 | 0.232 | 0.671 | 0.530 | 0.230 | 0.258 | 0.685 |
| **WESTERN** | | | | | | | | |
| Gujarat | 0.451 | 0.176 | 0.168 | 0.614 | 0.466 | 0.187 | 0.200 | 0.627 |
| Maharastra | 0.413 | 0.159 | 0.184 | 0.578 | 0.433 | 0.178 | 0.214 | 0.603 |
| Rajasthan | 0.480 | 0.171 | 0.128 | 0.615 | 0.523 | 0.211 | 0.188 | 0.670 |
| **CENTRAL** | | | | | | | | |
| Madhya Pradesh | 0.464 | 0.169 | 0.179 | 0.609 | 0.488 | 0.186 | 0.195 | 0.636 |
| **NORTHERN** | | | | | | | | |
| Haryana | 0.560 | 0.244 | 0.195 | 0.714 | 0.583 | 0.281 | 0.276 | 0.749 |
| Punjab | 0.594 | 0.288 | 0.263 | 0.756 | 0.622 | 0.308 | 0.315 | 0.775 |
| Uttar Pradesh | 0.438 | 0.144 | 0.098 | 0.571 | 0.501 | 0.187 | 0.146 | 0.636 |
| **SOUTHERN** | | | | | | | | |
| Andhra Pradesh | 0.474 | 0.214 | 0.269 | 0.649 | 0.483 | 0.208 | 0.242 | 0.652 |
| Karnataka | 0.483 | 0.212 | 0.289 | 0.645 | 0.480 | 0.203 | 0.264 | 0.642 |
| Kerala | 0.556 | 0.241 | 0.305 | 0.704 | 0.542 | 0.230 | 0.286 | 0.692 |
| Tamil Nadu | 0.453 | 0.169 | 0.205 | 0.603 | 0.455 | 0.174 | 0.201 | 0.612 |
| **India** | 0.446 | 0.165 | 0.179 | 0.597 | 0.441 | 0.175 | 0.192 | 0.609 |

**Note and Source:** Same as in Table 3A .

**Table 3C : Indices of Segregation at 3-digit Level of Occupational Classification by States**

| STATES | Segregation Indices at 3-digit Level | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Total Sector | | | | Urban Sector | | | |
| | DDI | SQRI | KI | Gs | DDI | SQRI | KI | Gs |
| (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) |
| **EASTERN** | | | | | | | | |
| Bihar | 0.446 | 0.151 | 0.116 | 0.581 | 0.489 | 0.177 | 0.138 | 0.622 |
| Orissa | 0.466 | 0.175 | 0.168 | 0.608 | 0.526 | 0.214 | 0.206 | 0.672 |
| West Bengal | 0.538 | 0.225 | 0.251 | 0.687 | 0.538 | 0.243 | 0.275 | 0.701 |
| **WESTERN** | | | | | | | | |
| Gujarat | 0.499 | 0.213 | 0.205 | 0.665 | 0.504 | 0.223 | 0.234 | 0.674 |
| Maharastra | 0.468 | 0.195 | 0.221 | 0.633 | 0.489 | 0.211 | 0.250 | 0.655 |
| Rajasthan | 0.518 | 0.202 | 0.159 | 0.656 | 0.558 | 0.243 | 0.219 | 0.711 |
| **CENTRAL** | | | | | | | | |
| Madhya Pradesh | 0.477 | 0.189 | 0.200 | 0.635 | 0.503 | 0.206 | 0.216 | 0.661 |
| **NORTHERN** | | | | | | | | |
| Haryana | 0.579 | 0.269 | 0.227 | 0.740 | 0.606 | 0.303 | 0.306 | 0.772 |
| Punjab | 0.608 | 0.306 | 0.290 | 0.774 | 0.634 | 0.325 | 0.340 | 0.791 |
| Uttar Pradesh | 0.457 | 0.161 | 0.120 | 0.599 | 0.507 | 0.200 | 0.165 | 0.654 |
| **SOUTHERN** | | | | | | | | |
| Andhra Pradesh | 0.495 | 0.242 | 0.301 | 0.684 | 0.517 | 0.239 | 0.276 | 0.688 |
| Karnataka | 0.503 | 0.238 | 0.317 | 0.682 | 0.508 | 0.231 | 0.295 | 0.678 |
| Kerala | 0.587 | 0.291 | 0.369 | 0.755 | 0.579 | 0.280 | 0.351 | 0.745 |
| Tamil Nadu | 0.482 | 0.192 | 0.234 | 0.640 | 0.493 | 0.199 | 0.229 | 0.649 |
| **India** | 0.470 | 0.189 | 0.208 | 0.632 | 0.475 | 0.198 | 0.218 | 0.644 |

**Note and Source:** Same as in Table 3A .

**Table 4 : Rank Correlation Matrices Based on the Rankings of the States by Alternative Occupational Segregation Indices**

**A: Total, 1-digit**

| | | | | |
|---|---|---|---|---|
| DDI | 1 | | | |
| SQRI | 0.908 | 1 | | |
| KI | 0.490 | 0.727 | 1 | |
| $G_S$ | 0.921 | 0.982 | 0.697 | 1 |
| | DDI | SQRI | KI | $G_S$ |

**B: Total, 2-digit**

| | | | | |
|---|---|---|---|---|
| DDI | 1 | | | |
| SQRI | 0.912 | 1 | | |
| KI | 0.675 | 0.780 | 1 | |
| $G_S$ | 0.947 | 0.987 | 0.749 | 1 |
| | DDI | SQRI | KI | $G_S$ |

**C: Total, 3-digit**

| | | | | |
|---|---|---|---|---|
| DDI | 1 | | | |
| SQRI | 0.921 | 1 | | |
| KI | 0.692 | 0.833 | 1 | |
| $G_S$ | 0.960 | 0.974 | 0.811 | 1 |
| | DDI | SQRI | KI | $G_S$ |

**D: Urban, 1-digit**

| | | | | |
|---|---|---|---|---|
| DDI | 1 | | | |
| SQRI | 0.956 | 1 | | |
| KI | 0.802 | 0.855 | 1 | |
| $G_S$ | 0.969 | 0.978 | 0.807 | 1 |
| | DDI | SQRI | KI | $G_S$ |

**E: Urban, 2-digit**

| | | | | |
|---|---|---|---|---|
| DDI | 1 | | | |
| SQRI | 0.859 | 1 | | |
| KI | 0.446 | 0.714 | 1 | |
| $G_S$ | 0.925 | 0.974 | 0.666 | 1 |
| | DDI | SQRI | KI | $G_S$ |

**F: Urban, 3-digit**

| | | | | |
|---|---|---|---|---|
| DDI | 1 | | | |
| SQRI | 0.908 | 1 | | |
| KI | 0.609 | 0.807 | 1 | |
| $G_S$ | 0.921 | 0.996 | 0.789 | 1 |
| | DDI | SQRI | KI | $G_S$ |

Note: Same as in Table 3A.

**Table 5 : Rank Correlation Matrices Based on the Rankings of the States by Different Levels of Aggregation of Occupational Classification**

**A: DDI, Total**

| | | | |
|---|---|---|---|
| 1D | 1 | | |
| 2D | 0.244 | 1 | |
| 3D | 0.319 | 0.934 | 1 |
| | 1D | 2D | 3D |

**E: DDI, Urban**

| | | | |
|---|---|---|---|
| 1D | 1 | | |
| 2D | 0.565 | 1 | |
| 3D | 0.468 | 0.930 | 1 |
| | 1D | 2D | 3D |

**B: SQRI, Total**

| | | | |
|---|---|---|---|
| 1D | 1 | | |
| 2D | 0.477 | 1 | |
| 3D | 0.420 | 0.978 | 1 |
| | 1D | 2D | 3D |

**F: SQRI, Urban**

| | | | |
|---|---|---|---|
| 1D | 1 | | |
| 2D | 0.468 | 1 | |
| 3D | 0.407 | 0.965 | 1 |
| | 1D | 2D | 3D |

**C: KI, Total**

| | | | |
|---|---|---|---|
| 1D | 1 | | |
| 2D | 0.534 | 1 | |
| 3D | 0.578 | 0.996 | 1 |
| | 1D | 2D | 3D |

**G: KI, Urban**

| | | | |
|---|---|---|---|
| 1D | 1 | | |
| 2D | 0.433 | 1 | |
| 3D | 0.415 | 0.982 | 1 |
| | 1D | 2D | 3D |

**D: Gs, Total**

| | | | |
|---|---|---|---|
| 1D | 1 | | |
| 2D | 0.424 | 1 | |
| 3D | 0.429 | 0.987 | 1 |
| | 1D | 2D | 3D |

**H: Gs, Urban**

| | | | |
|---|---|---|---|
| 1D | 1 | | |
| 2D | 0.407 | 1 | |
| 3D | 0.358 | 0.934 | 1 |
| | 1D | 2D | 3D |

**Note :** Same as in Table 3A.

**Table 6 : Estimated Regression Relationships of the Gini Segregation Index at 2-digit Level of Occupational Classification on the Parameters of the Distribution of $F_i/M_i$**

**A: Total Sector**

| Variable Name | Estimated Coefficient | Standard Error | t-ratio |
|---|---|---|---|
| Mean | -4.934 | 0.8518 | -5.793 |
| Dispersion | 2.3799 | 0.8543 | 2.786 |
| Dispersion (U) | 1.7984 | 1.263 | 1.424 |
| Dispersion (L) | 48.439 | 23.78 | 2.037 |
| Skewness | 11.46 | 6.45 | 1.777 |
| Kurtosis | -12.004 | 6.712 | -1.788 |
| Constant | 0.88934 | 0.1695 | 5.246 |

$n=14$, $df=7$, $R^2=0.8699$, $\overline{R}^2=0.7584$

**B: Urban Sector**

| Variable Name | Estimated Coefficient | Standard Error | t-ratio |
|---|---|---|---|
| mean | -6.4372 | 1.37 | -4.697 |
| Dispersion | 3.7009 | 1.555 | 2.38 |
| Dispersion (U) | 1.8896 | 3.17 | 0.5961 |
| Dispersion (L) | 14.28 | 42.72 | 0.3342 |
| Skewness | 1.5918 | 6.141 | 0.2592 |
| Kurtosis | -2.0507 | 6.994 | -0.2932 |
| Constant | 0.8055 | 0.3567 | 2.259 |

$n=14$, $df=7$, $R^2=0.8942$, $\overline{R}^2=0.8035$

**C: Total Sector**

| Variable Name | Estimated Coefficient | Standard Error | t-ratio |
|---|---|---|---|
| Mean | -4.6738 | 0.884 | -5.287 |
| Dispersion | 3.5432 | 0.6499 | 5.452 |
| Skewness | -0.51879 | 2.043 | -0.2539 |
| Kurtosis | 0.71919 | 2.212 | 0.3252 |
| Constant | 0.59175 | 0.0873 | 6.782 |

$n=14$, $df=9$, $R^2=0.7902$, $\overline{R}^2=0.697$

**D: Urban Sector**

| Variable Name | Estimated Coefficient | Standard Error | t-ratio |
|---|---|---|---|
| Mean | -5.7283 | 0.7538 | -7.599 |
| Dispersion | 4.3076 | 0.5625 | 7.659 |
| Skewness | -0.19898 | 1.593 | -0.1249 |
| Kurtosis | 0.40891 | 1.71 | 0.2392 |
| Constant | 0.60293 | 0.05914 | 10.2 |

$n=14$, $df=9$, $R^2=0.8878$, $\overline{R}^2=0.8379$

**Table 7 : Gini Segregation Index at 1-digit and 2-digit Levels Based on Selected NSS Rounds**

| Survey Round | Period | Rural / Urban | Gini Indices at 1-digit Level | Gini Indices at 2-digit Level |
|---|---|---|---|---|
| (1) | (2) | (3) | (4) | (5) |
| 38 | 1983 | Rural | 0.173 | 0.233 |
| | | Urban | 0.040 | 0.500 |
| 50 | 1993-94 | Rural | 0.268 | 0.491 |
| | | Urban | 0.147 | 0.385 |
| 55 | 1999-2000 | Rural | 0.167 | 0.429 |
| | | Urban | 0.274 | 0.501 |

**Source :** NSS Reports on Surveys of Employment and Unemployment, Nos. 341, 409 and 458.

**Table 8A : Occupational Segregation and Effect of Aggregation : Decomposition Results for 2-digit Classification**

| States | Sector | Decomposition of occupational segregation at 2-digit level | | | |
|---|---|---|---|---|---|
| | | Total | Between | Within | Interaction |
| (1) | (2) | (3) | (4) | (5) | (6) |
| **EASTERN** | | | | | |
| Bihar | Total | 0.558 | 0.283 | 0.127 | 0.148 |
| | Urban | 0.600 | 0.405 | 0.089 | 0.106 |
| Orissa | Total | 0.572 | 0.226 | 0.144 | 0.201 |
| | Urban | 0.642 | 0.360 | 0.111 | 0.170 |
| West Bengal | Total | 0.671 | 0.326 | 0.191 | 0.155 |
| | Urban | 0.685 | 0.470 | 0.105 | 0.110 |
| **WESTERN** | | | | | |
| Gujarat | Total | 0.614 | 0.337 | 0.136 | 0.141 |
| | Urban | 0.627 | 0.400 | 0.114 | 0.113 |
| Maharashtra | Total | 0.578 | 0.237 | 0.144 | 0.197 |
| | Urban | 0.603 | 0.316 | 0.122 | 0.165 |
| Rajasthan | Total | 0.615 | 0.305 | 0.155 | 0.155 |
| | Urban | 0.670 | 0.387 | 0.138 | 0.145 |
| **CENTRAL** | | | | | |
| Madhya Pradesh | Total | 0.609 | 0.221 | 0.200 | 0.188 |
| | Urban | 0.636 | 0.290 | 0.166 | 0.180 |
| **NORTHERN** | | | | | |
| Haryana | Total | 0.714 | 0.478 | 0.118 | 0.118 |
| | Urban | 0.749 | 0.597 | 0.083 | 0.069 |
| Punjab | Total | 0.756 | 0.581 | 0.096 | 0.079 |
| | Urban | 0.775 | 0.643 | 0.074 | 0.058 |
| Uttar Pradesh | Total | 0.571 | 0.302 | 0.141 | 0.128 |
| | Urban | 0.636 | 0.404 | 0.123 | 0.109 |
| **SOUTHERN** | | | | | |
| Andhra Pradesh | Total | 0.649 | 0.225 | 0.206 | 0.218 |
| | Urban | 0.652 | 0.272 | 0.169 | 0.211 |
| Karnataka | Total | 0.645 | 0.197 | 0.217 | 0.231 |
| | Urban | 0.642 | 0.247 | 0.175 | 0.220 |
| Kerala | Total | 0.704 | 0.295 | 0.201 | 0.208 |
| | Urban | 0.692 | 0.369 | 0.160 | 0.163 |
| Tamil Nadu | Total | 0.603 | 0.264 | 0.180 | 0.159 |
| | Urban | 0.612 | 0.283 | 0.158 | 0.171 |
| **INDIA** | Total | 0.597 | 0.257 | 0.163 | 0.177 |
| | Urban | 0.609 | 0.333 | 0.124 | 0.152 |

**Source :** Same as in Table 1A.

**Table 8B: Occupational Segregation and Effect of Aggregation : Decomposition Results for 3-digit Classification**

| States | Sector | Decomposition of occupational segregation at 3-digit level | | | |
|---|---|---|---|---|---|
| | | Total | Between | Within | Interaction |
| (1) | (2) | (3) | (4) | (5) | (6) |
| **EASTERN** | | | | | |
| Bihar | Total | 0.581 | 0.558 | 0.004 | 0.019 |
| | Urban | 0.622 | 0.600 | 0.005 | 0.017 |
| Orissa | Total | 0.608 | 0.572 | 0.006 | 0.030 |
| | Urban | 0.672 | 0.642 | 0.004 | 0.026 |
| West Bengal | Total | 0.687 | 0.671 | 0.003 | 0.013 |
| | Urban | 0.701 | 0.685 | 0.003 | 0.013 |
| **WESTERN** | | | | | |
| Gujarat | Total | 0.665 | 0.614 | 0.007 | 0.044 |
| | Urban | 0.674 | 0.627 | 0.006 | 0.041 |
| Maharashtra | Total | 0.633 | 0.578 | 0.005 | 0.050 |
| | Urban | 0.655 | 0.603 | 0.005 | 0.047 |
| Rajasthan | Total | 0.656 | 0.615 | 0.007 | 0.034 |
| | Urban | 0.711 | 0.670 | 0.006 | 0.035 |
| **CENTRAL** | | | | | |
| Madhya Pradesh | Total | 0.635 | 0.609 | 0.003 | 0.023 |
| | Urban | 0.661 | 0.636 | 0.003 | 0.022 |
| **NORTHERN** | | | | | |
| Haryana | Total | 0.740 | 0.714 | 0.005 | 0.021 |
| | Urban | 0.772 | 0.749 | 0.005 | 0.018 |
| Punjab | Total | 0.774 | 0.756 | 0.004 | 0.014 |
| | Urban | 0.791 | 0.775 | 0.004 | 0.012 |
| Uttar Pradesh | Total | 0.599 | 0.571 | 0.006 | 0.022 |
| | Urban | 0.654 | 0.636 | 0.004 | 0.014 |
| **SOUTHERN** | | | | | |
| Andhra Pradesh | Total | 0.684 | 0.649 | 0.005 | 0.030 |
| | Urban | 0.688 | 0.652 | 0.004 | 0.032 |
| Karnataka | Total | 0.682 | 0.645 | 0.005 | 0.032 |
| | Urban | 0.678 | 0.642 | 0.005 | 0.031 |
| Kerala | Total | 0.755 | 0.704 | 0.007 | 0.044 |
| | Urban | 0.745 | 0.692 | 0.007 | 0.046 |
| Tamil Nadu | Total | 0.640 | 0.603 | 0.004 | 0.032 |
| | Urban | 0.649 | 0.612 | 0.004 | 0.033 |
| **INDIA** | Total | 0.632 | 0.597 | 0.004 | 0.031 |
| | Urban | 0.644 | 0.609 | 0.004 | 0.031 |

**Source :** Same as in Table 1A.

**Table 9A : Segregation Across Occupational Groups within Occupational Divisions by States**

| States | Sector | Intensity of Segregation by Occupational Divisions | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | A | B | C | D | E | F | All |
| (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) |
| **EASTERN** | | | | | | | | |
| Bihar | Total | 0.337 | 0.182 | 0.080 | 0.010 | 0.646 | 0.557 | 0.127 |
| | Urban | 0.464 | 0.180 | 0.083 | 0.011 | 0.603 | 0.491 | 0.089 |
| Orissa | Total | 0.355 | 0.215 | 0.149 | 0.059 | 0.660 | 0.578 | 0.144 |
| | Urban | 0.550 | 0.221 | 0.162 | 0.026 | 0.674 | 0.607 | 0.111 |
| West Bengal | Total | 0.399 | 0.206 | 0.143 | 0.015 | 0.769 | 0.682 | 0.191 |
| | Urban | 0.489 | 0.241 | 0.146 | 0.032 | 0.757 | 0.587 | 0.105 |
| **WESTERN** | | | | | | | | |
| Gujarat | Total | 0.458 | 0.382 | 0.208 | 0.086 | 0.765 | 0.543 | 0.136 |
| | Urban | 0.566 | 0.388 | 0.179 | 0.096 | 0.747 | 0.520 | 0.114 |
| Maharashtra | Total | 0.476 | 0.336 | 0.234 | 0.016 | 0.724 | 0.544 | 0.144 |
| | Urban | 0.565 | 0.365 | 0.207 | 0.032 | 0.679 | 0.596 | 0.122 |
| Rajasthan | Total | 0.430 | 0.218 | 0.296 | 0.062 | 0.749 | 0.605 | 0.155 |
| | Urban | 0.539 | 0.220 | 0.280 | 0.072 | 0.751 | 0.585 | 0.138 |
| **CENTRAL** | | | | | | | | |
| Madhya Pradesh | Total | 0.400 | 0.200 | 0.234 | 0.060 | 0.736 | 0.627 | 0.200 |
| | Urban | 0.474 | 0.208 | 0.211 | 0.063 | 0.738 | 0.643 | 0.166 |
| **NORTHERN** | | | | | | | | |
| Haryana | Total | 0.524 | 0.297 | 0.216 | 0.111 | 0.724 | 0.596 | 0.118 |
| | Urban | 0.614 | 0.315 | 0.210 | 0.134 | 0.644 | 0.527 | 0.083 |
| Punjab | Total | 0.576 | 0.427 | 0.218 | 0.079 | 0.717 | 0.587 | 0.096 |
| | Urban | 0.638 | 0.438 | 0.196 | 0.078 | 0.646 | 0.523 | 0.074 |
| Uttar Pradesh | Total | 0.387 | 0.215 | 0.178 | 0.007 | 0.630 | 0.530 | 0.141 |
| | Urban | 0.531 | 0.250 | 0.164 | 0.023 | 0.588 | 0.578 | 0.123 |
| **SOUTHERN** | | | | | | | | |
| Andhra Pradesh | Total | 0.407 | 0.187 | 0.253 | 0.109 | 0.557 | 0.720 | 0.206 |
| | Urban | 0.490 | 0.232 | 0.241 | 0.129 | 0.705 | 0.698 | 0.169 |
| Karnataka | Total | 0.414 | 0.304 | 0.322 | 0.060 | 0.696 | 0.723 | 0.217 |
| | Urban | 0.505 | 0.282 | 0.301 | 0.039 | 0.759 | 0.689 | 0.175 |
| Kerala | Total | 0.456 | 0.381 | 0.274 | 0.158 | 0.704 | 0.740 | 0.201 |
| | Urban | 0.547 | 0.388 | 0.264 | 0.178 | 0.669 | 0.707 | 0.160 |
| Tamil Nadu | Total | 0.469 | 0.162 | 0.277 | 0.052 | 0.578 | 0.591 | 0.180 |
| | Urban | 0.575 | 0.204 | 0.260 | 0.058 | 0.646 | 0.584 | 0.158 |
| **INDIA** | Total | 0.008 | 0.000 | 0.002 | 0.001 | 0.008 | 0.144 | 0.163 |
| | Urban | 0.011 | 0.000 | 0.003 | 0.001 | 0.008 | 0.101 | 0.124 |

**Note and Source :** Same as in Table 1A.

**Table 9B : Distribution of Occupational Groups by Intensity of Segregation**

| States | Sector | Distribution of Occupational Groups by Intensity of Segregation | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | a | b | c | d | e | f | g | h | i | All |
| (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) | (12) |
| **EASTERN** | | | | | | | | | | | |
| Bihar | Total | 7 | 27 | 19 | 15 | 9 | 3 | 0 | 3 | 0 | 83 |
| | Urban | 7 | 26 | 22 | 11 | 8 | 5 | 3 | 0 | 1 | 83 |
| Orissa | Total | 7 | 25 | 17 | 13 | 12 | 7 | 1 | 1 | 0 | 83 |
| | Urban | 7 | 25 | 12 | 21 | 8 | 8 | 1 | 1 | 0 | 83 |
| West Bengal | Total | 7 | 20 | 21 | 22 | 9 | 3 | 0 | 1 | 0 | 83 |
| | Urban | 7 | 25 | 23 | 20 | 6 | 1 | 0 | 1 | 0 | 83 |
| **WESTERN** | | | | | | | | | | | |
| Gujarat | Total | 7 | 23 | 20 | 23 | 7 | 2 | 1 | 0 | 0 | 83 |
| | Urban | 7 | 21 | 21 | 21 | 10 | 2 | 1 | 0 | 0 | 83 |
| Maharashtra | Total | 7 | 32 | 25 | 11 | 5 | 3 | 0 | 0 | 0 | 83 |
| | Urban | 7 | 32 | 27 | 10 | 4 | 2 | 1 | 0 | 0 | 83 |
| Rajasthan | Total | 7 | 27 | 16 | 16 | 8 | 5 | 2 | 1 | 1 | 83 |
| | Urban | 7 | 25 | 17 | 15 | 13 | 1 | 3 | 1 | 1 | 83 |
| **CENTRAL** | | | | | | | | | | | |
| Madhya Pradesh | Total | 7 | 23 | 21 | 19 | 10 | 0 | 3 | 0 | 0 | 83 |
| | Urban | 7 | 21 | 27 | 16 | 8 | 2 | 2 | 0 | 0 | 83 |
| **NORTHERN** | | | | | | | | | | | |
| Haryana | Total | 7 | 28 | 25 | 14 | 3 | 1 | 3 | 2 | 0 | 83 |
| | Urban | 7 | 29 | 24 | 10 | 7 | 1 | 3 | 2 | 0 | 83 |
| Punjab | Total | 7 | 16 | 29 | 16 | 8 | 5 | 2 | 0 | 0 | 83 |
| | Urban | 7 | 22 | 19 | 19 | 8 | 6 | 2 | 0 | 0 | 83 |
| Uttar Pradesh | Total | 7 | 21 | 21 | 21 | 11 | 2 | 0 | 0 | 0 | 83 |
| | Urban | 7 | 20 | 20 | 23 | 12 | 0 | 1 | 0 | 0 | 83 |
| **SOUTHERN** | | | | | | | | | | | |
| Andhra Pradesh | Total | 7 | 36 | 28 | 6 | 2 | 2 | 2 | 0 | 0 | 83 |
| | Urban | 7 | 39 | 23 | 8 | 3 | 3 | 0 | 0 | 0 | 83 |
| Karnataka | Total | 7 | 39 | 21 | 7 | 4 | 2 | 2 | 1 | 0 | 83 |
| | Urban | 7 | 38 | 23 | 7 | 4 | 2 | 2 | 0 | 0 | 83 |
| Kerala | Total | 7 | 29 | 19 | 9 | 11 | 5 | 2 | 0 | 1 | 83 |
| | Urban | 7 | 27 | 16 | 13 | 12 | 2 | 4 | 1 | 1 | 83 |
| Tamil Nadu | Total | 7 | 28 | 28 | 10 | 6 | 1 | 1 | 2 | 0 | 83 |
| | Urban | 7 | 32 | 26 | 11 | 1 | 3 | 1 | 2 | 0 | 83 |
| **INDIA** | Total | 7 | 16 | 21 | 19 | 14 | 4 | 1 | 1 | 0 | 83 |
| | Urban | 7 | 17 | 22 | 20 | 12 | 3 | 0 | 2 | 0 | 83 |

**Notes :** **a** : $G_s = 0$; **b** : $0 < G_s \leq 0.1$; **c** : $0.1 < G_s \leq 0.2$; **d** : $0.2 < G_s \leq 0.3$; **e** : $0.3 < G_s \leq 0.4$;
**f** : $0.4 < G_s \leq 0.5$; **g** : $0.5 < G_s \leq 0.6$; **h** : $0.6 < G_s \leq 0.7$; **i** : $G_s = 0.7$ & above

**Source :** General Economic Tables, 1991 Census, Series-1 India, Table B.19.

## Table 10 : Decomposition of Gini Segregation Index : Occupations Versus Industrial Categories in Total Sector

### INDIA

| Levels of Classification | Occupational Segregation | | | |
|---|---|---|---|---|
| | Total | Between | Within | Interaction |
| 1-digit | 0.419 | 0.257 | 0.094 | 0.068 |
| 2-digit | 0.615 | 0.597 | 0.002 | 0.016 |
| 3-digit | 0.649 | 0.632 | 0.001 | 0.016 |

| Levels of Classification | Industrial Segregation | | | |
|---|---|---|---|---|
| | Total | Between | Within | Interaction |
| 1-digit | 0.419 | 0.366 | 0.039 | 0.014 |
| 2-digit | 0.615 | 0.366 | 0.106 | 0.143 |
| 3-digit | 0.649 | 0.366 | 0.116 | 0.167 |

## EASTERN STATES

### BIHAR

| Levels of Classification | Occupational Segregation | | | |
|---|---|---|---|---|
| | Total | Between | Within | Interaction |
| 1-digit | 0.426 | 0.283 | 0.079 | 0.064 |
| 2-digit | 0.574 | 0.558 | 0.002 | 0.014 |
| 3-digit | 0.596 | 0.581 | 0.004 | 0.011 |

| Levels of Classification | Industrial Segregation | | | |
|---|---|---|---|---|
| | Total | Between | Within | Interaction |
| 1-digit | 0.426 | 0.328 | 0.063 | 0.035 |
| 2-digit | 0.574 | 0.328 | 0.112 | 0.134 |
| 3-digit | 0.596 | 0.328 | 0.120 | 0.148 |

### ORISSA

| Levels of Classification | Occupational Segregation | | | |
|---|---|---|---|---|
| | Total | Between | Within | Interaction |
| 1-digit | 0.414 | 0.226 | 0.093 | 0.095 |
| 2-digit | 0.597 | 0.572 | 0.002 | 0.023 |
| 3-digit | 0.629 | 0.608 | 0.001 | 0.020 |

| Levels of Classification | Industrial Segregation | | | |
|---|---|---|---|---|
| | Total | Between | Within | Interaction |
| 1-digit | 0.414 | 0.339 | 0.044 | 0.031 |
| 2-digit | 0.597 | 0.339 | 0.114 | 0.144 |
| 3-digit | 0.629 | 0.339 | 0.126 | 0.164 |

### WEST BENGAL

| Levels of Classification | Occupational Segregation | | | |
|---|---|---|---|---|
| | Total | Between | Within | Interaction |
| 1-digit | 0.553 | 0.326 | 0.142 | 0.085 |
| 2-digit | 0.703 | 0.671 | 0.005 | 0.027 |
| 3-digit | 0.716 | 0.687 | 0.003 | 0.026 |

| Levels of Classification | Industrial Segregation | | | |
|---|---|---|---|---|
| | Total | Between | Within | Interaction |
| 1-digit | 0.553 | 0.509 | 0.035 | 0.009 |
| 2-digit | 0.703 | 0.509 | 0.101 | 0.093 |
| 3-digit | 0.716 | 0.509 | 0.108 | 0.099 |

## WESTERN STATES

### GUJARAT

| Levels of Classification | Occupational Segregation | | | |
|---|---|---|---|---|
| | Total | Between | Within | Interaction |
| 1-digit | 0.487 | 0.337 | 0.087 | 0.063 |
| 2-digit | 0.649 | 0.614 | 0.004 | 0.031 |
| 3-digit | 0.690 | 0.665 | 0.001 | 0.024 |

| Levels of Classification | Industrial Segregation | | | |
|---|---|---|---|---|
| | Total | Between | Within | Interaction |
| 1-digit | 0.487 | 0.425 | 0.045 | 0.017 |
| 2-digit | 0.649 | 0.425 | 0.110 | 0.114 |
| 3-digit | 0.690 | 0.425 | 0.125 | 0.140 |

### MAHARASHTRA

| Levels of Classification | Occupational Segregation | | | |
|---|---|---|---|---|
| | Total | Between | Within | Interaction |
| 1-digit | 0.395 | 0.237 | 0.078 | 0.080 |
| 2-digit | 0.607 | 0.578 | 0.002 | 0.027 |
| 3-digit | 0.651 | 0.633 | 0.001 | 0.017 |

| Levels of Classification | Industrial Segregation | | | |
|---|---|---|---|---|
| | Total | Between | Within | Interaction |
| 1-digit | 0.395 | 0.323 | 0.041 | 0.031 |
| 2-digit | 0.607 | 0.323 | 0.110 | 0.174 |
| 3-digit | 0.651 | 0.323 | 0.123 | 0.205 |

## Table 10(Contd.) : Decomposition of Gini Segregation Index : Occupations Versus Industrial Categories in Total Sector

### RAJASTHAN

| Levels of Classification | Occupational Segregation | | | |
|---|---|---|---|---|
| | Total | Between | Within | Interaction |
| 1-digit | 0.452 | 0.305 | 0.090 | 0.057 |
| 2-digit | 0.640 | 0.615 | 0.002 | 0.023 |
| 3-digit | 0.677 | 0.656 | 0.001 | 0.020 |

| Levels of Classification | Industrial Segregation | | | |
|---|---|---|---|---|
| | Total | Between | Within | Interaction |
| 1-digit | 0.452 | 0.389 | 0.043 | 0.020 |
| 2-digit | 0.640 | 0.389 | 0.109 | 0.142 |
| 3-digit | 0.677 | 0.389 | 0.121 | 0.167 |

## CENTRAL STATES

### MADHYA PRADESH

| Levels of Classification | Occupational Segregation | | | |
|---|---|---|---|---|
| | Total | Between | Within | Interaction |
| 1-digit | 0.432 | 0.221 | 0.123 | 0.089 |
| 2-digit | 0.629 | 0.609 | 0.003 | 0.017 |
| 3-digit | 0.652 | 0.635 | 0.002 | 0.015 |

| Levels of Classification | Industrial Segregation | | | |
|---|---|---|---|---|
| | Total | Between | Within | Interaction |
| 1-digit | 0.432 | 0.384 | 0.032 | 0.016 |
| 2-digit | 0.629 | 0.384 | 0.096 | 0.149 |
| 3-digit | 0.652 | 0.384 | 0.103 | 0.165 |

## NORTHERN STATES

### HARYANA

| Levels of Classification | Occupational Segregation | | | |
|---|---|---|---|---|
| | Total | Between | Within | Interaction |
| 1-digit | 0.561 | 0.478 | 0.044 | 0.039 |
| 2-digit | 0.724 | 0.714 | 0.002 | 0.008 |
| 3-digit | 0.749 | 0.740 | 0.001 | 0.008 |

| Levels of Classification | Industrial Segregation | | | |
|---|---|---|---|---|
| | Total | Between | Within | Interaction |
| 1-digit | 0.561 | 0.445 | 0.101 | 0.015 |
| 2-digit | 0.724 | 0.445 | 0.172 | 0.107 |
| 3-digit | 0.749 | 0.445 | 0.183 | 0.121 |

### PUNJAB

| Levels of Classification | Occupational Segregation | | | |
|---|---|---|---|---|
| | Total | Between | Within | Interaction |
| 1-digit | 0.660 | 0.581 | 0.052 | 0.027 |
| 2-digit | 0.771 | 0.756 | 0.003 | 0.012 |
| 3-digit | 0.791 | 0.774 | 0.002 | 0.015 |

| Levels of Classification | Industrial Segregation | | | |
|---|---|---|---|---|
| | Total | Between | Within | Interaction |
| 1-digit | 0.660 | 0.541 | 0.096 | 0.023 |
| 2-digit | 0.771 | 0.541 | 0.157 | 0.073 |
| 3-digit | 0.791 | 0.541 | 0.165 | 0.085 |

### UTTAR PRADESH

| Levels of Classification | Occupational Segregation | | | |
|---|---|---|---|---|
| | Total | Between | Within | Interaction |
| 1-digit | 0.450 | 0.302 | 0.097 | 0.051 |
| 2-digit | 0.594 | 0.571 | 0.005 | 0.018 |
| 3-digit | 0.620 | 0.599 | 0.002 | 0.019 |

| Levels of Classification | Industrial Segregation | | | |
|---|---|---|---|---|
| | Total | Between | Within | Interaction |
| 1-digit | 0.450 | 0.379 | 0.055 | 0.015 |
| 2-digit | 0.594 | 0.379 | 0.108 | 0.108 |
| 3-digit | 0.620 | 0.379 | 0.118 | 0.123 |

## SOUTHERN STATES

### ANDHRA PRADESH

| Levels of Classification | Occupational Segregation | | | |
|---|---|---|---|---|
| | Total | Between | Within | Interaction |
| 1-digit | 0.444 | 0.225 | 0.124 | 0.095 |
| 2-digit | 0.659 | 0.649 | 0.002 | 0.008 |
| 3-digit | 0.693 | 0.684 | 0.001 | 0.008 |

| Levels of Classification | Industrial Segregation | | | |
|---|---|---|---|---|
| | Total | Between | Within | Interaction |
| 1-digit | 0.444 | 0.377 | 0.036 | 0.031 |
| 2-digit | 0.659 | 0.377 | 0.098 | 0.184 |
| 3-digit | 0.693 | 0.377 | 0.107 | 0.209 |

## Table 10(Contd.) : Decomposition of Gini Segregation Index : Occupations Versus Industrial Categories in Total Sector

### KARNATAKA

| Levels of Classification | Occupational Segregation | | | |
|---|---|---|---|---|
| | Total | Between | Within | Interaction |
| 1-digit | 0.374 | 0.197 | 0.095 | 0.082 |
| 2-digit | 0.659 | 0.645 | 0.002 | 0.012 |
| 3-digit | 0.692 | 0.682 | 0.001 | 0.009 |

| Levels of Classification | Industrial Segregation | | | |
|---|---|---|---|---|
| | Total | Between | Within | Interaction |
| 1-digit | 0.374 | 0.300 | 0.033 | 0.041 |
| 2-digit | 0.659 | 0.300 | 0.126 | 0.233 |
| 3-digit | 0.692 | 0.300 | 0.136 | 0.256 |

### KERALA

| Levels of Classification | Occupational Segregation | | | |
|---|---|---|---|---|
| | Total | Between | Within | Interaction |
| 1-digit | 0.528 | 0.295 | 0.124 | 0.109 |
| 2-digit | 0.726 | 0.704 | 0.002 | 0.020 |
| 3-digit | 0.769 | 0.755 | 0.001 | 0.013 |

| Levels of Classification | Industrial Segregation | | | |
|---|---|---|---|---|
| | Total | Between | Within | Interaction |
| 1-digit | 0.528 | 0.457 | 0.039 | 0.032 |
| 2-digit | 0.726 | 0.457 | 0.113 | 0.156 |
| 3-digit | 0.769 | 0.457 | 0.128 | 0.184 |

### TAMIL NADU

| Levels of Classification | Occupational Segregation | | | |
|---|---|---|---|---|
| | Total | Between | Within | Interaction |
| 1-digit | 0.460 | 0.264 | 0.121 | 0.075 |
| 2-digit | 0.640 | 0.603 | 0.004 | 0.033 |
| 3-digit | 0.664 | 0.640 | 0.002 | 0.022 |

| Levels of Classification | Industrial Segregation | | | |
|---|---|---|---|---|
| | Total | Between | Within | Interaction |
| 1-digit | 0.460 | 0.393 | 0.039 | 0.028 |
| 2-digit | 0.640 | 0.393 | 0.107 | 0.140 |
| 3-digit | 0.664 | 0.393 | 0.115 | 0.156 |

**Source :** Same as in Table 1A.

**Table 11A : Distribution of Occupations at 1-, 2- and 3- digit Levels of Classification by Intensity of Gender Domination and States : Total Sector**

| States | Levels of Classification | Distribution of Occupations by Intensity of Gender Domination | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | HFD | MFD | EC | MMD | HMD | CMD | ALL |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| **EASTERN** | | | | | | | | |
| Bihar | 1-digit | – | – | – | – | 6 | – | 6 |
| | 2-digit | – | – | – | 7 | 76 | – | 83 |
| | 3-digit | 1 | 2 | – | 32 | 420 | 3 | 458 |
| Orissa | 1-digit | – | – | – | – | 6 | – | 6 |
| | 2-digit | – | 1 | – | 11 | 71 | – | 83 |
| | 3-digit | 1 | 5 | – | 53 | 394 | 5 | 458 |
| West Bengal | 1-digit | – | – | – | 2 | 4 | – | 6 |
| | 2-digit | – | 2 | – | 8 | 73 | – | 83 |
| | 3-digit | 1 | 7 | – | 46 | 404 | – | 458 |
| **WESTERN** | | | | | | | | |
| Gujarat | 1-digit | – | – | – | 1 | 5 | – | 6 |
| | 2-digit | – | 2 | – | 9 | 72 | – | 83 |
| | 3-digit | 3 | 3 | – | 45 | 406 | 1 | 458 |
| Maharashtra | 1-digit | – | – | – | 1 | 5 | – | 6 |
| | 2-digit | – | 3 | – | 11 | 69 | – | 83 |
| | 3-digit | 4 | 8 | – | 69 | 377 | – | 458 |
| Rajasthan | 1-digit | – | – | – | – | 6 | – | 6 |
| | 2-digit | – | 2 | – | 6 | 75 | – | 83 |
| | 3-digit | – | 7 | – | 37 | 410 | 4 | 458 |
| **CENTRAL** | | | | | | | | |
| Madhya Pradesh | 1-digit | – | – | – | 1 | 5 | – | 6 |
| | 2-digit | – | 3 | – | 7 | 73 | – | 83 |
| | 3-digit | 1 | 8 | – | 57 | 392 | – | 458 |
| **NORTHERN** | | | | | | | | |
| Haryana | 1-digit | – | – | – | 1 | 5 | – | 6 |
| | 2-digit | – | 1 | – | 5 | 77 | – | 83 |
| | 3-digit | 2 | 2 | – | 30 | 382 | 42 | 458 |
| Punjab | 1-digit | – | – | – | 1 | 5 | – | 6 |
| | 2-digit | – | 2 | – | 4 | 77 | – | 83 |
| | 3-digit | 2 | 7 | – | 28 | 395 | 26 | 458 |
| Uttar Pradesh | 1-digit | – | – | – | – | 6 | – | 6 |
| | 2-digit | – | – | – | 6 | 77 | – | 83 |
| | 3-digit | – | 4 | – | 26 | 428 | – | 458 |
| **SOUTHERN** | | | | | | | | |
| Andhra Prdesh | 1-digit | – | – | – | 3 | 3 | – | 6 |
| | 2-digit | 1 | 1 | – | 14 | 67 | – | 83 |
| | 3-digit | 4 | 11 | – | 67 | 376 | – | 458 |
| Karnataka | 1-digit | – | – | – | 3 | 3 | – | 6 |
| | 2-digit | 2 | 1 | – | 15 | 65 | – | 83 |
| | 3-digit | 5 | 9 | – | 95 | 348 | 1 | 458 |
| Kerala | 1-digit | – | – | – | 4 | 2 | – | 6 |
| | 2-digit | – | 9 | – | 20 | 54 | – | 83 |
| | 3-digit | 6 | 26 | 2 | 111 | 313 | – | 458 |
| Tamil Nadu | 1-digit | – | – | – | 2 | 4 | – | 6 |
| | 2-digit | 1 | 3 | – | 19 | 60 | – | 83 |
| | 3-digit | 3 | 14 | – | 99 | 342 | – | 458 |
| India | 1-digit | – | – | – | 1 | 5 | – | 6 |
| | 2-digit | – | 2 | – | 12 | 69 | – | 83 |
| | 3-digit | 2 | 8 | – | 62 | 386 | – | 458 |

**Source :** Same as in Table 1A.

**Table 11B: Distribution of Occupations at 1-, 2- and 3- digit Levels of Classification by Intensity of Gender Domination and States : Urban Sector**

| States | Levels of Classification | Distribution of Occupations by Intensity of Gender Domination | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | HFD | MFD | EC | MMD | HMD | CMD | ALL |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| **EASTERN** | | | | | | | | |
| Bihar | 1-digit | – | – | – | – | 6 | – | 6 |
| | 2-digit | – | 1 | – | 5 | 77 | – | 83 |
| | 3-digit | 1 | 1 | – | 30 | 410 | 16 | 458 |
| Orissa | 1-digit | – | – | – | 1 | 5 | – | 6 |
| | 2-digit | – | 1 | – | 8 | 74 | – | 83 |
| | 3-digit | 1 | 6 | – | 41 | 389 | 21 | 458 |
| West Bengal | 1-digit | – | – | – | 2 | 4 | – | 6 |
| | 2-digit | – | 2 | – | 6 | 75 | – | 83 |
| | 3-digit | 1 | 5 | – | 36 | 415 | 1 | 458 |
| **WESTERN** | | | | | | | | |
| Gujarat | 1-digit | – | – | – | 1 | 5 | – | 6 |
| | 2-digit | – | 3 | – | 7 | 73 | – | 83 |
| | 3-digit | 3 | 5 | – | 45 | 404 | 1 | 458 |
| Maharastra | 1-digit | – | – | – | 2 | 4 | – | 6 |
| | 2-digit | 1 | 4 | – | 9 | 69 | – | 83 |
| | 3-digit | 5 | 11 | – | 70 | 371 | 1 | 458 |
| Rajasthan | 1-digit | – | – | – | 1 | 5 | – | 6 |
| | 2-digit | – | 2 | – | 6 | 75 | – | 83 |
| | 3-digit | 1 | 5 | – | 42 | 396 | 14 | 458 |
| **CENTRAL** | | | | | | | | |
| Madhya Pradesh | 1-digit | – | – | – | 1 | 5 | – | 6 |
| | 2-digit | – | 2 | – | 9 | 72 | – | 83 |
| | 3-digit | 1 | 8 | – | 57 | 392 | – | 458 |
| **NORTHERN** | | | | | | | | |
| Haryana | 1-digit | – | – | – | 1 | 5 | – | 6 |
| | 2-digit | – | 2 | – | 4 | 77 | – | 83 |
| | 3-digit | 1 | 9 | – | 32 | 359 | 57 | 458 |
| Punjab | 1-digit | – | – | – | 1 | 5 | – | 6 |
| | 2-digit | – | 2 | – | 4 | 77 | – | 83 |
| | 3-digit | 1 | 12 | – | 27 | 372 | 46 | 458 |
| Uttar Pradesh | 1-digit | – | – | – | 1 | 5 | – | 6 |
| | 2-digit | – | – | – | 5 | 78 | – | 83 |
| | 3-digit | – | 3 | – | 30 | 422 | 3 | 458 |
| **SOUTHERN** | | | | | | | | |
| Andhra Pradesh | 1-digit | – | – | – | 2 | 4 | – | 6 |
| | 2-digit | – | 2 | – | 11 | 70 | – | 83 |
| | 3-digit | 5 | 11 | – | 66 | 375 | 1 | 458 |
| Karnataka | 1-digit | – | – | – | 2 | 4 | – | 6 |
| | 2-digit | 2 | 1 | – | 15 | 65 | – | 83 |
| | 3-digit | 5 | 11 | – | 91 | 347 | 4 | 458 |
| Kerala | 1-digit | – | – | – | 3 | 3 | – | 6 |
| | 2-digit | 1 | 8 | – | 26 | 48 | – | 83 |
| | 3-digit | 7 | 31 | – | 114 | 302 | 4 | 458 |
| Tamil Nadu | 1-digit | – | – | – | 2 | 4 | – | 6 |
| | 2-digit | 1 | 4 | – | 17 | 61 | – | 83 |
| | 3-digit | 4 | 13 | – | 87 | 353 | 1 | 458 |
| India | 1-digit | – | – | – | 2 | 4 | – | 6 |
| | 2-digit | – | 3 | – | 9 | 71 | – | 83 |
| | 3-digit | 2 | 8 | – | 59 | 389 | – | 458 |

**Source:** Same as in Table 11A.

**Table 12A : List of Highly and Moderately Female Dominated Occupations at 2-digit Level by States**

| States | Sector | List of Occupations (codes) | |
|---|---|---|---|
| | | Highly Female Dominated (HFD) | Moderately Female Dominated (MFD) |
| (1) | (2) | (3) (4) | (5) (6) |
| **EASTERN** | | | |
| Bihar | Total | — | — |
| | Urban | — | 08(52.5) |
| Orissa | Total | — | 78(52.6) |
| | Urban | — | 53(51.1) |
| West Bengal | Total | — | 53(68.9), 78(57.9) |
| | Urban | — | 53(71.2), 08(54.8) |
| **WESTERN** | | | |
| Gujarat | Total | — | 08(56.7), 53(75.2) |
| | Urban | — | 08(58.5), 53(75.2), 15(52.4) |
| Maharashtra | Total | — | 08(53.1), 53(76.3), 78(76.8) |
| | Urban | 78(83.4) | 08(56.3), 53(76.9), 15(52.8), 32(50.6) |
| Rajasthan | Total | — | 78(67.9), 51(56.06) |
| | Urban | — | 08(53.9), 78(69.7) |
| **CENTRAL** | | | |
| Madhya Pradesh | Total | — | 13(59.7), 78(54.2), 53(71.4) |
| | Urban | — | 53(74.7), 78(55.2) |
| **NORTHERN** | | | |
| Haryana | Total | — | 53(50.1) |
| | Urban | — | 08(52.2), 15(56.0) |
| Punjab | Total | — | 15(53.4), 13(57.5) |
| | Urban | — | 08(51.2), 15(62.9), |
| Uttar Pradesh | Total | — | — |
| | Urban | — | — |
| **SOUTHERN** | | | |
| Andhra Pradesh | Total | — | 53(70.1) |
| | Urban | — | 53(79.4), 78(79.1) |
| Karnataka | Total | 53(81.4), 78(85.9) | 13(51.6) |
| | Urban | 53(83.7), 78(80.7) | 08(52.9) |
| Kerala | Total | — | 06(64.6), 08(72.8), 15(55.4) 32(55.3), 53(78.1), 54(63.7), 75(66.3), 78(59.7), 94(64.8), |
| | Urban | 53(83.8) | 06(64.0), 08(75.5), 15(65.0) 32(58.9), 51(50.5), 54(66.6), 75(55.2), 94(55.9), |
| Tamil Nadu | Total | 53(83.0) | 08(52.0), 51(62.1), 78(68.6) |
| | Urban | 53(81.8) | 08(53.8), 15(58.5), 78(57.0) 51(65.5) |
| **India** | Total | — | 53 (65.0), 78(67.8) |
| | Urban | — | 53(67.4) 78(62.5), 08(54.1) |

**Note: (1)** **06**:Life Science Technicians;**08**:Nursing and other Medical and Health Technicians; **13**:Social Scientists and Related Workers; **15**:Teachers; **32**:Stenographers, Typists and Card and Tape Punching Operators; **51**:House Keepers, Matrons and Stewards(Domestic and Institutional);**53**: Maids and other House Keeping Service Workers n.e.c. ; **54**:Buiilding Caretakers, Sweepers, Cleaners and Related Workers; **75**:Spinners, Weavers, Knitters, Dyers and Related Workers;**78**:Tobacco Prepares and Tabacco Product Makers;**94**:Production and Related Workers, n.e.c.

**(2)** Figures in the parentheses denote the corresponding percentages of female workers to total workers.

**Table 12B: List of Highly Female Dominated Occupations at 3- digit Level by States**

| States | List of Highly Female Dominated Occupations (codes) | |
|---|---|---|
| | Total | Urban |
| (1) | (2) | (3) |
| **EASTERN** | | |
| Bihar | 084 | 084 |
| Orissa | 084 | 084 |
| West Bengal | 084 | 084 |
| **WESTERN** | | |
| Gujarat | 084, 154, 530 | 084, 154, 530 |
| Maharashtra | 084, 085, 154, 530 | 084, 085, 154, 530, 784 |
| Rajasthan | — | 084 |
| **CENTRAL** | | |
| Madhya Pradesh | 084 | 084 |
| **NORTHERN** | | |
| Haryana | 084, 530 | 084 |
| Punjab | 084, 085 | 084 |
| Uttar Pradesh | — | — |
| **SOUTHERN** | | |
| Andhra Pradesh | 084, 530, 784, 946 | 084, 530, 784, 946, 764 |
| Karnataka | 084, 154, 530, 531, 784 | 084, 154, 530, 5 31, 784 |
| Kerala | 084, 154, 530, 751, 945, 946 | 084, 154, 530,531, 751, 945,946 |
| Tamil Nadu | 084, 530, 531 | 084, 530, 531, 154 |
| **India** | 084, 530 | 084, 530 |

**Notes : 084** : Nurses ; **085** : Midwives and Health Visitors; **153** : Primary Teachers; **154** : Pre-primary Teachers ; **530** : Ayaha, Nurse and Maids ; **531** : Domestic Servants; **751** : Fibre Prepares; **764** : Carcass Lifters; **784** : Bidi Makers; **945** : Mat Weavers; **946** : Leaf Plate Makers.

**Source:** Same as in Table 1A.

**Table 13: Percentage Distribution of Male and Female Workers by Intensity of Gender Domination at 2-digit Level of Occupational Classification: Total Sector**

| States | Gender | Percentage Distribution of Workers by Intensity of Gender Domination | | | | |
|---|---|---|---|---|---|---|
| | | HMD | MMD | MFD | HFD | ALL |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| EASTERN | | | | | | |
| Bihar | Male | 93.5 | 6.5 | – | – | 100.0 |
| | Female | 70.2 | 29.8 | – | – | 100.0 |
| Orissa | Male | 73.1 | 26.3 | 0.6 | – | 100.0 |
| | Female | 29.5 | 65.8 | 4.7 | – | 100.0 |
| West Bengal | Male | 89.8 | 7.6 | 2.6 | – | 100.0 |
| | Female | 43.2 | 23.9 | 32.9 | – | 100.0 |
| WESTERN | | | | | | |
| Gujarat | Male | 92.5 | 7.0 | 0.5 | – | 100.0 |
| | Female | 53.8 | 37.2 | 9.0 | – | 100.0 |
| Maharashtra | Male | 86.9 | 11.8 | 1.3 | – | 100.0 |
| | Female | 48.0 | 33.9 | 18.1 | – | 100.0 |
| Rajasthan | Male | 92.5 | 7.3 | 0.2 | – | 100.0 |
| | Female | 61.0 | 33.7 | 5.3 | – | 100.0 |
| CENTRAL | | | | | | |
| Madhya Pradesh | Male | 85.2 | 11.7 | 3.1 | – | 100.0 |
| | Female | 43.0 | 31.7 | 25.3 | – | 100.0 |
| NORTHERN | | | | | | |
| Haryana | Male | 93.5 | 6.3 | 0.2 | – | 100.0 |
| | Female | 46.8 | 50.1 | 3.1 | – | 100.0 |
| Punjab | Male | 95.3 | 1.9 | 2.8 | – | 100.0 |
| | Female | 42.5 | 14.6 | 42.9 | – | 100.0 |
| Uttar Pradesh | Male | 91.7 | 8.3 | – | – | 100.0 |
| | Female | 60.6 | 39.4 | – | – | 100.0 |
| SOUTHERN | | | | | | |
| Andhra Prdesh | Male | 76.8 | 22.1 | 0.3 | 0.8 | 100.0 |
| | Female | 29.4 | 45.8 | 3.0 | 21.8 | 100.0 |
| Karnataka | Male | 79.0 | 19.7 | 0.1 | 1.2 | 100.0 |
| | Female | 30.6 | 38.7 | 0.7 | 30.0 | 100.0 |
| Kerala | Male | 76.2 | 13.7 | 10.1 | – | 100.0 |
| | Female | 20.6 | 22.4 | 57.0 | – | 100.0 |
| Tamil Nadu | Male | 75.1 | 22.9 | 1.9 | 0.1 | 100.0 |
| | Female | 29.9 | 51.8 | 15.1 | 3.2 | 100.0 |
| India | Male | 83.3 | 15.4 | 1.3 | – | 100.0 |
| | Female | 40.8 | 42.0 | 17.2 | – | 100.0 |

**Source:** Same as in Table 11A.

**Table 14: Distribution of Occupations at 2-digit Level of Classification by Values of Representation Ratios**

| States | Sector | Distribution of Occupational Groups by Values of Representation Ratios | | | | | |
|---|---|---|---|---|---|---|---|
| | | a | b | c | d | e | All |
| (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
| **Eastern** | | | | | | | |
| Bihar | Total | 22 | 3 | 13 | 30 | 15 | 83 |
| | Urban | 23 | 5 | 7 | 37 | 11 | 83 |
| Orissa | Total | 19 | 2 | 15 | 21 | 26 | 83 |
| | Urban | 21 | 8 | 6 | 31 | 17 | 83 |
| West Bengal | Total | 20 | 3 | 15 | 26 | 19 | 83 |
| | Urban | 23 | 7 | 16 | 24 | 13 | 83 |
| **Western** | | | | | | | |
| Gujarat | Total | 27 | 9 | 16 | 17 | 14 | 83 |
| | Urban | 30 | 8 | 14 | 18 | 13 | 83 |
| Maharashtra | Total | 25 | 13 | 12 | 23 | 10 | 83 |
| | Urban | 26 | 12 | 11 | 25 | 9 | 83 |
| Rajasthan | Total | 22 | 8 | 10 | 24 | 19 | 83 |
| | Urban | 23 | 2 | 15 | 21 | 22 | 83 |
| **Central** | | | | | | | |
| Madhya Pradesh | Total | 17 | 7 | 13 | 25 | 21 | 83 |
| | Urban | 19 | 9 | 11 | 28 | 16 | 83 |
| **Northern** | | | | | | | |
| Haryana | Total | 22 | 5 | 12 | 24 | 20 | 83 |
| | Urban | 22 | 8 | 12 | 19 | 22 | 83 |
| Punjab | Total | 21 | 7 | 9 | 22 | 24 | 83 |
| | Urban | 23 | 6 | 8 | 24 | 22 | 83 |
| Uttar Pradesh | Total | 20 | 7 | 12 | 36 | 8 | 83 |
| | Urban | 22 | 9 | 10 | 37 | 5 | 83 |
| **Southern** | | | | | | | |
| Andhra Pradesh | Total | 16 | 4 | 15 | 23 | 25 | 83 |
| | Urban | 23 | 7 | 12 | 22 | 19 | 83 |
| Karnataka | Total | 19 | 9 | 20 | 19 | 16 | 83 |
| | Urban | 27 | 9 | 10 | 24 | 13 | 83 |
| Kerala | Total | 26 | 8 | 10 | 20 | 19 | 83 |
| | Urban | 32 | 5 | 10 | 17 | 19 | 83 |
| Tamil Nadu | Total | 24 | 8 | 14 | 19 | 18 | 83 |
| | Urban | 27 | 8 | 16 | 15 | 17 | 83 |
| **INDIA** | Total | 25 | 7 | 13 | 29 | 9 | 83 |
| | Urban | 29 | 8 | 7 | 30 | 9 | 83 |

**Notes :** (1) **a:** RR>1; **b:** 0.8≤RR<1; **c** :0.5<RR<0.8; **d:** 0.2<RR<0.5; **e:** RR ≤0.2
(2) No occupation having RR = 1 or RR = 0,5 was noticed.

**Source :** Same as in Table 1A.

**Table 16 : Gini Segregation Indices and Rankings of the States for the Total and Urban Sectors : 1981 and 1991**

| States | Gini Segregation Indices | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Total Sector | | | | Urban Sector | | | |
| | 1981 | | 1991 | | 1981 | | 1991 | |
| | Value | Rank | Value | Rank | Value | Rank | Value | Rank |
| (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) |
| Bihar | 0.617 | 5 | 0.558 | 1 | 0.695 | 9 | 0.600 | 1 |
| Orissa | 0.594 | 1 | 0.572 | 3 | 0.678 | 7 | 0.642 | 8 |
| West Bengal | 0.669 | 11 | 0.671 | 11 | 0.706 | 10 | 0.685 | 11 |
| Gujarat | 0.623 | 6 | 0.614 | 7 | 0.642 | 2 | 0.627 | 4 |
| Maharashtra | 0.600 | 3 | 0.578 | 4 | 0.620 | 1 | 0.603 | 2 |
| Rajasthan | 0.595 | 2 | 0.615 | 8 | 0.666 | 6 | 0.670 | 10 |
| Madhya Pradesh | 0.611 | 4 | 0.609 | 6 | 0.650 | 3 | 0.636 | 5 |
| Haryana | 0.717 | 13 | 0.714 | 13 | 0.776 | 14 | 0.749 | 13 |
| Punjab | 0.751 | 14 | 0.756 | 14 | 0.771 | 13 | 0.775 | 14 |
| Uttar Pradesh | 0.630 | 8 | 0.571 | 2 | 0.711 | 12 | 0.636 | 6 |
| Andhra | 0.652 | 9 | 0.649 | 10 | 0.684 | 8 | 0.652 | 9 |
| Karnataka | 0.657 | 10 | 0.645 | 9 | 0.655 | 4 | 0.642 | 7 |
| Kerala | 0.702 | 12 | 0.704 | 12 | 0.708 | 11 | 0.692 | 12 |
| Tamil Nadu | 0.628 | 7 | 0.603 | 5 | 0.658 | 5 | 0.612 | 3 |

**Source :** General Economic Tables, Series 1-India, Population Census, 1981 and 1991.

**Table 17 : Rank Correlation Matrices based on Rankings of States by Census Years and Sectors**

**A : 1981**

| | Total | Urban |
|---|---|---|
| Total | 1 | |
| Urban | 0.670 | 1 |

**B: 1991**

| | Total | Urban |
|---|---|---|
| Total | 1 | |
| Urban | 0.868 | 1 |

**C : Total**

| | 1981 | 1991 |
|---|---|---|
| 1981 | 1 | |
| 1991 | 0.771 | 1 |

**D : Urban**

| | 1981 | 1991 |
|---|---|---|
| 1981 | 1 | |
| 1991 | 0.644 | 1 |

**Source :** Same as in Table 16.

## Table 18A: Selected Indicators of Development, Gini Segregation Index and Rankings of States by their Levels in Early Nineties

| | $G_{2T}$ | | IMR | | LE | | FLR | | OLR | | PH | | DW | | EL | | PCNSDP | | DU | | BPL | | SP | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| State | Value | Rank | Value | Rank | Value | Rank | Value | Rank | Value | Rank | Value | Rank | Value | Rank | Value | Rank | Value | Rank | Value | Rank | Value | Rank | Value | Rank |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 |
| Andhra Pradesh | 0.649 | 10 | 73 | 9 | 60.64 | 7 | 33.7 | 10 | 45.11 | 10 | 30.41 | 12 | 55.08 | 11 | 46.3 | 8 | 1779 | 10 | 26.9 | 7 | 22.19 | 2 | 24.1 | 12 |
| Bihar | 0.558 | 1 | 69 | 6.5 | 57.63 | 11 | 23.1 | 13 | 38.54 | 14 | 30.18 | 13 | 58.76 | 10 | 12.57 | 14 | 1195 | 14 | 13.1 | 14 | 54.96 | 14 | 23.7 | 10 |
| Gujarat | 0.614 | 7 | 69 | 6.5 | 59.86 | 8 | 48.5 | 5 | 60.91 | 4 | 56.93 | 2 | 69.78 | 5 | 65.93 | 4 | 2559 | 4 | 34.5 | 2 | 24.21 | 3 | 18.1 | 5 |
| Haryana | 0.714 | 13 | 68 | 5 | 62.74 | 4 | 40.9 | 8 | 55.33 | 8 | 50.14 | 6 | 74.32 | 3 | 70.35 | 2 | 3466 | 2 | 24.6 | 9 | 25.05 | 4 | 16.9 | 4 |
| Karnataka | 0.645 | 9 | 77 | 10 | 62.72 | 5 | 44.3 | 7 | 55.98 | 7 | 45.55 | 7 | 71.68 | 4 | 52.47 | 6 | 2098 | 6 | 30.9 | 4 | 33.16 | 7 | 9.3 | 1 |
| Kerala | 0.704 | 12 | 16 | 1 | 70.76 | 1 | 86.9 | 1 | 90.59 | 1 | 55.97 | 4 | 18.89 | 14 | 48.43 | 7 | 1818 | 9 | 26.4 | 8 | 25.43 | 5 | 15.9 | 3 |
| Madhya Pradesh | 0.609 | 6 | 117 | 13 | 55.5 | 13 | 28.4 | 11 | 43.45 | 11 | 30.47 | 11 | 53.41 | 12 | 43.3 | 9 | 1696 | 11 | 23.2 | 10 | 42.52 | 12 | 13.7 | 2 |
| Maharashtra | 0.578 | 4 | 60 | 4 | 63.11 | 3 | 50.5 | 3 | 63.05 | 3 | 52.2 | 5 | 68.49 | 6 | 69.4 | 3 | 3442 | 3 | 38.7 | 1 | 36.86 | 10 | 25.8 | 13 |
| Orissa | 0.572 | 3 | 124 | 14 | 56.15 | 12 | 34.4 | 9 | 48.55 | 9 | 18.71 | 14 | 39.07 | 13 | 23.51 | 12 | 1383 | 13 | 13.4 | 13 | 48.56 | 13 | 19.9 | 7 |
| Punjab | 0.756 | 14 | 53 | 2 | 65.46 | 2 | 49.7 | 4 | 57.14 | 6 | 76.97 | 1 | 92.74 | 1 | 82.31 | 1 | 3751 | 1 | 29.6 | 5 | 11.77 | 1 | 23.6 | 9 |
| Rajasthan | 0.615 | 8 | 79 | 11 | 58.22 | 10 | 20.8 | 14 | 38.81 | 13 | 56.13 | 3 | 58.96 | 9 | 35.03 | 10 | 1943 | 8 | 22.9 | 11 | 27.41 | 6 | 23.8 | 11 |
| Tamil Nadu | 0.603 | 5 | 57 | 3 | 60.83 | 6 | 52.3 | 2 | 63.72 | 2 | 45.54 | 8 | 67.42 | 7 | 54.74 | 5 | 2219 | 5 | 34.2 | 3 | 35.03 | 8 | 18.7 | 6 |
| Uttar Pradesh | 0.571 | 2 | 97 | 12 | 52.03 | 14 | 26 | 12 | 41.71 | 12 | 41.03 | 9 | 62.24 | 8 | 21.91 | 13 | 1612 | 12 | 19.8 | 12 | 40.85 | 11 | 21.1 | 8 |
| West Bengal | 0.671 | 11 | 71 | 8 | 59.75 | 9 | 47.1 | 6 | 57.72 | 5 | 32.61 | 10 | 81.98 | 2 | 32.9 | 11 | 1946 | 7 | 27.5 | 6 | 35.66 | 9 | 27.8 | 14 |

**Note:**

$G_{2T}$ : Gini segregation Index at 2-digit level for total sector
IMR : Infant Mortality Rate
LE : Life Expectancy
FLR : Female Literacy Rate
OLR : Overall Literacy Rate
PH : Percentage of Households having Pucca House
DW : Percentage of Households having Drinking Water
EL : Percentage of Households having Electricity
PCNSDP : Per capita Net State Domestic Products at 1980-81 Prices
DU : Degree of Urbanization
BPL : Percentage of Population below Poverty Line
SP : Percentage of Slum Population

**Sources:**

(1) General Economic Tables, Series 1-India, 1991 Census.
(2) Various Volumes of Statistical Abstract, India.
(3) Midterm Appraisal of the Eighth Five-year Plan, Government of India.
(4) Environment Statistics, CSO, Government of India.

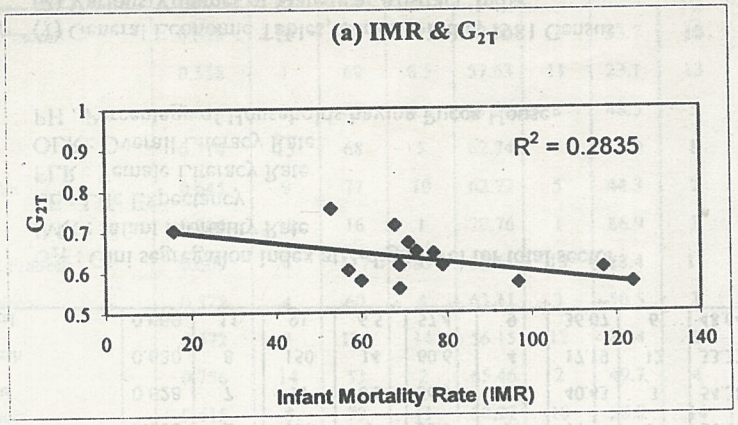
## Table 18B: Selected Indicators of Development, Gini Segregation Index and Rankings of States by their Levels in Early Eighties

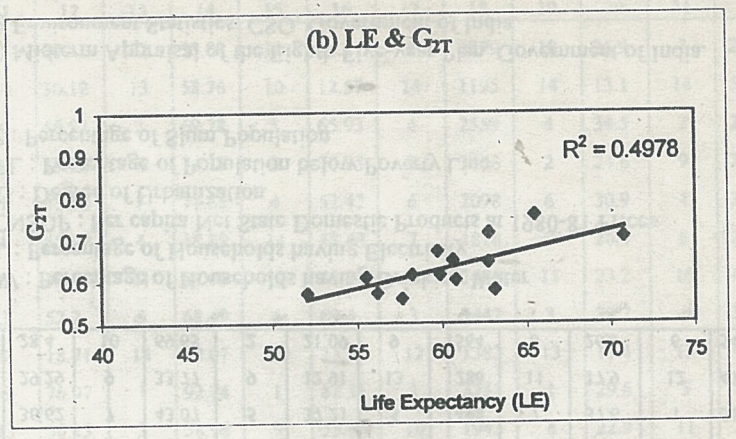
| | $G_{2T}$ | | IMR | | LE | | FLR | | OLR | | PH | | DW | | EL | | PCNSDP | | DU | | BPL | | SP | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| State | Value | Rank | Value | Rank | Value | Rank | Value | Rank | Value | Rank | Value | Rank | Value | Rank | Value | Rank | Value | Rank | Value | Rank | Value | Rank | Value | Rank |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 |
| Andhra Pradesh | 0.652 | 9 | 86 | 5 | 58.4 | 7 | 24.16 | 10 | 35.66 | 10 | 26.22 | 11 | 25.89 | 11 | 24.41 | 8 | 1380 | 9 | 23.3 | 7 | 28.91 | 3 | 22.9 | 12 |
| Bihar | 0.617 | 5 | 118 | 11 | 52.8 | 13 | 16.52 | 13 | 32.03 | 13 | 23.64 | 13 | 37.64 | 7 | 9.2 | 14 | 878 | 14 | 12.5 | 13 | 62.22 | 13 | 37.5 | 14 |
| Gujarat | 0.623 | 6 | 116 | 10 | 57.6 | 8 | 38.46 | 5 | 62.21 | 2 | 46.96 | 3 | 52.41 | 4 | 44.81 | 3 | 1951 | 4 | 31.1 | 3 | 32.79 | 4 | 14.4 | 8 |
| Haryana | 0.717 | 13 | 101 | 8 | 60.3 | 6 | 26.93 | 8 | 43.85 | 8 | 39.82 | 4 | 55.11 | 3 | 51.53 | 2 | 2370 | 3 | 21.9 | 8 | 21.37 | 2 | 9.7 | 4 |
| Karnataka | 0.657 | 10 | 69 | 2 | 60.6 | 4 | 33.17 | 7 | 46.2 | 7 | 29.33 | 8 | 33.87 | 8 | 32.98 | 6 | 1596 | 5 | 28.9 | 4 | 38.24 | 6 | 5.4 | 1 |
| Kerala | 0.702 | 12 | 37 | 1 | 68.4 | 1 | 75.65 | 1 | 81.56 | 1 | 38.8 | 6 | 12.2 | 14 | 28.78 | 7 | 1494 | 8 | 18.7 | 11 | 40.42 | 7 | 8.6 | 2 |
| Madhya Pradesh | 0.611 | 4 | 142 | 13 | 51.6 | 14 | 19 | 11 | 34.22 | 11 | 25.05 | 12 | 20.17 | 12 | 17.11 | 12 | 1358 | 10 | 20.3 | 10 | 49.78 | 10 | 10.2 | 5 |
| Maharashtra | 0.600 | 3 | 79 | 3 | 60.6 | 4 | 41.01 | 2 | 55.83 | 3 | 39.63 | 5 | 42.29 | 6 | 40.65 | 4 | 2427 | 2 | 35 | 2 | 43.44 | 8 | 19.6 | 10 |
| Orissa | 0.594 | 1 | 135 | 12 | 53 | 12 | 25.14 | 9 | 40.96 | 9 | 13 | 14 | 14.58 | 13 | 17.75 | 11 | 1231 | 12 | 11.8 | 14 | 65.29 | 14 | 9.1 | 3 |
| Punjab | 0.751 | 14 | 81 | 4 | 63.1 | 2 | 39.7 | 4 | 48.12 | 6 | 58.12 | 1 | 84.56 | 1 | 60.9 | 1 | 2675 | 1 | 27.7 | 5 | 16.18 | 1 | 25.1 | 13 |
| Rajasthan | 0.595 | 2 | 108 | 9 | 53.5 | 11 | 14 | 14 | 30.09 | 14 | 49.08 | 2 | 27.14 | 10 | 20.54 | 10 | 1222 | 13 | 21 | 9 | 34.46 | 5 | 14.2 | 7 |
| Tamil Nadu | 0.628 | 7 | 91 | 6.5 | 56.9 | 10 | 40.43 | 3 | 54.38 | 4 | 36.62 | 7 | 43.07 | 5 | 37.21 | 5 | 1498 | 7 | 37.6 | 1 | 51.66 | 11 | 16.8 | 9 |
| Uttar Pradesh | 0.630 | 8 | 150 | 14 | 60.6 | 4 | 17.19 | 12 | 33.33 | 12 | 29.29 | 9 | 33.77 | 9 | 12.91 | 13 | 1286 | 11 | 17.9 | 12 | 47.07 | 9 | 13 | 6 |
| West Bengal | 0.669 | 11 | 91 | 6.5 | 57.4 | 9 | 36.07 | 6 | 48.64 | 5 | 28.4 | 10 | 69.65 | 2 | 21.09 | 9 | 1564 | 6 | 26.5 | 6 | 54.85 | 12 | 21 | 11 |

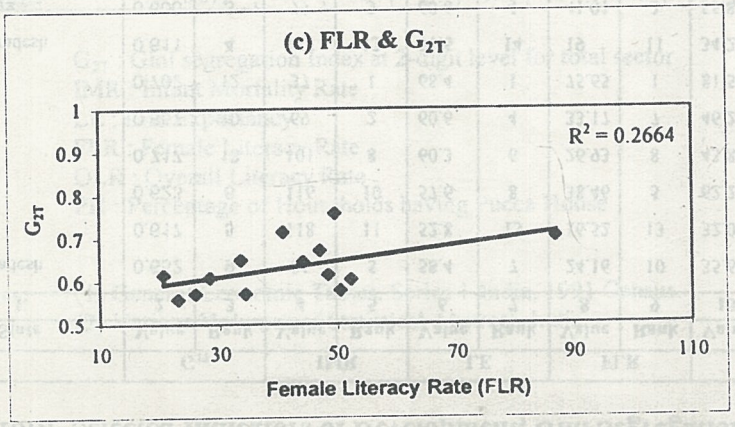
**Note:**
$G_{2T}$ : Gini segregation Index at 2-digit level for total sector
IMR : Infant Mortality Rate
LE : Life Expectancy
FLR : Female Literacy Rate
OLR : Overall Literacy Rate
PH : Percentage of Households having Pucca House
DW : Percentage of Households having Drinking Water
EL : Percentage of Households having Electricity
PCNSDP : Per capita Net State Domestic Products at 1980-81 Prices
DU : Degree of Urbanization
BPL : Percentage of Population below Poverty Line
SP : Percentage of Slum Population

**Sources:**
(1) General Economic Tables, Series 1-India, 1981 Census.
(2) Various Volumes of Statistical Abstract, India.
(3) Midterm Appraisal of the Eighth Five-year Plan, Government of India.
(4) Environment Statistics, CSO, Government of India.

**Figure 2 : Scatter Diagrams and Linear Regressions between Gini Segregation Index and Selected Indicators of Development in Early Nineties**



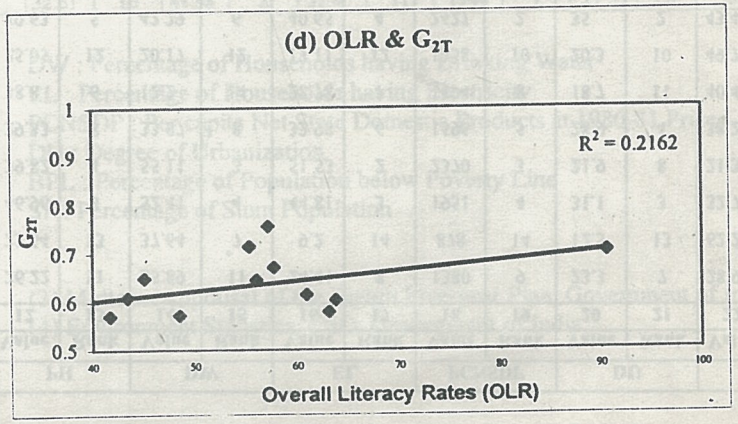




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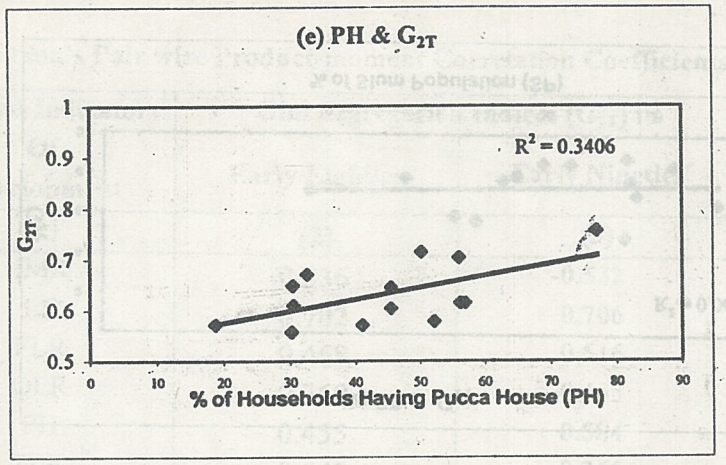
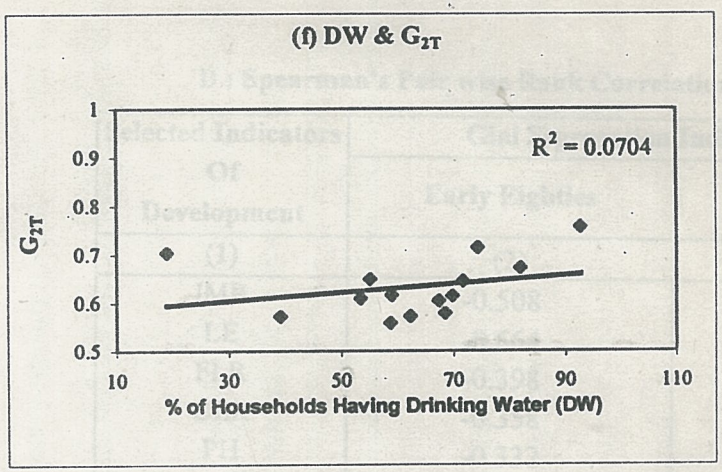
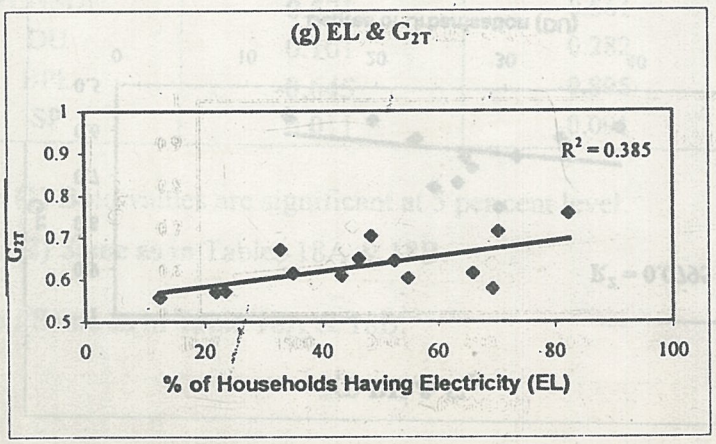
**Figure 2 (Contd.) : Scatter Diagrams and Linear Regressions between Gini Segregation Index and Selected Indicators of Development in Early Nineties**



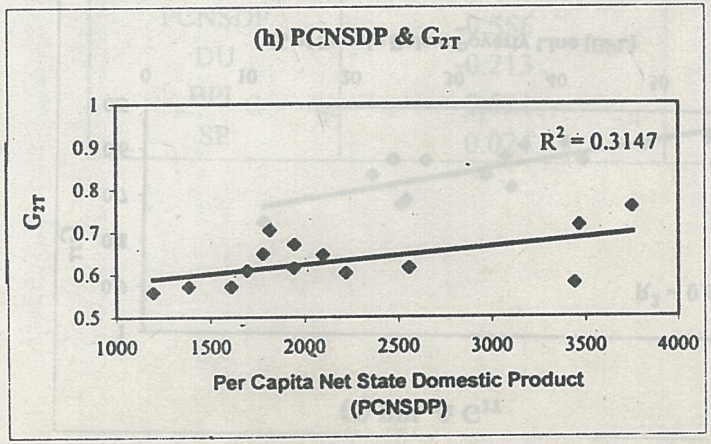




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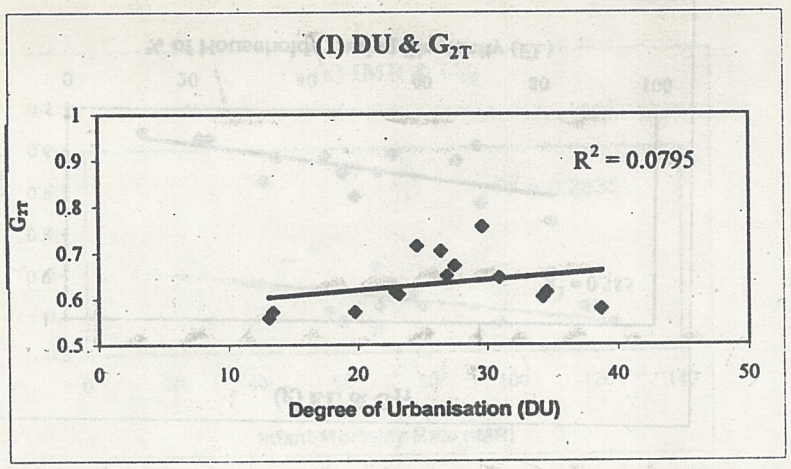
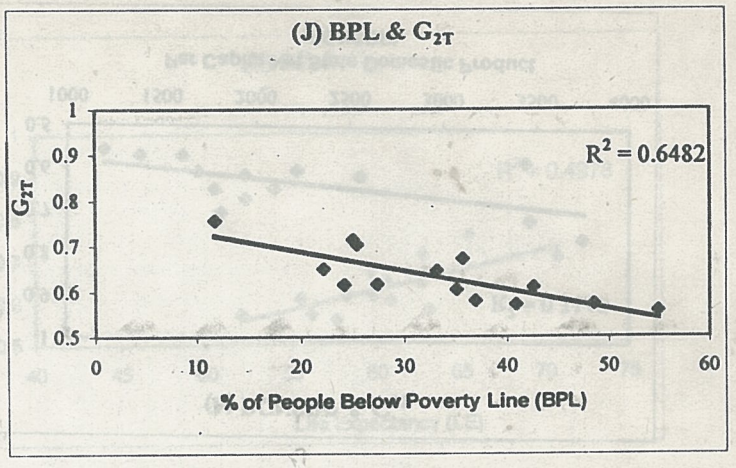
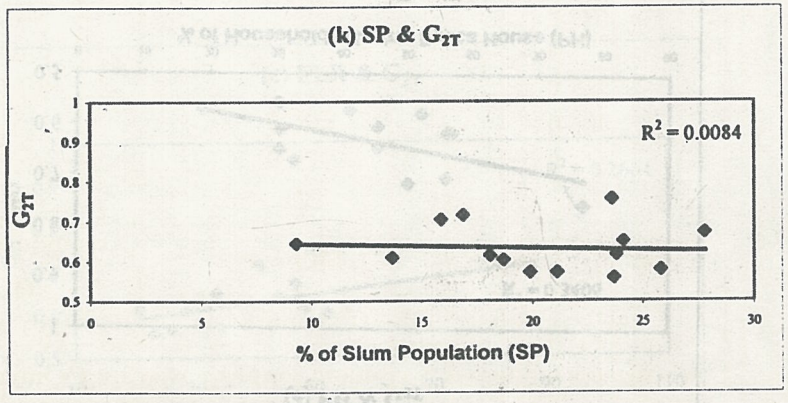
**Figure 2 (Contd.) : Scatter Diagrams and Linear Regressions between Gini Segregation Index and Selected Indicators of Development in Early Nineties**




**Source:** Same as in Table 18A.

**Table 19 : Pair-wise Product-moment and Rank Correlation Coefficients between Gini Segregation Index and Selected Indicators of Development for the States during Early Eighties and Early Nineties : Total Sector**

**A : Pearson's Pair wise Product-moment Correlation Coefficients**

| Selected Indicators Of Development | Gini Segregation Indices ($G_{2T}$) in | |
|---|---|---|
| | Early Eighties | Early Nineties |
| (1) | (2) | (3) |
| IMR | **-0.536** | **-0.532** |
| LE | **0.702** | **0.706** |
| FLR | 0.468 | 0.516 |
| OLR | 0.360 | 0.465 |
| PH | 0.455 | **0.584** |
| DW | **0.549** | 0.265 |
| EL | **0.622** | **0.621** |
| PCNSDP | **0.571** | **0.561** |
| DU | 0.101 | 0.282 |
| BPL | **-0.645** | **-0.805** |
| SP | 0.011 | -0.091 |

**B : Spearman's Pair wise Rank Correlation Coefficients**

| Selected Indicators Of Development | Gini Segregation Indices ($G_{2T}$) in | |
|---|---|---|
| | Early Eighties | Early Nineties |
| (1) | (2) | (3) |
| IMR | -0.508 | -0.438 |
| LE | **-0.664** | **-0.662** |
| FLR | -0.398 | -0.385 |
| OLR | -0.358 | -0.371 |
| PH | -0.332 | -0.516 |
| DW | -0.442 | -0.420 |
| EL | -0.503 | **-0.587** |
| PCNSDP | **-0.556** | **-0.600** |
| DU | -0.213 | -0.327 |
| BPL | -0.521 | **-0.807** |
| SP | 0.024 | -0.116 |

**Notes :** (1) Bold values are significant at 5 per cent level.

(2) Same as in Tables 18A & 18B.

**Source :** Same as in Table 18A & 18B.

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