WORKING PAPER NO. 126

LABOUR QUALITY IN INDIAN MANUFACTURING
A STATE LEVEL ANALYSIS

SURESH CHAND AGGARWAL

April, 2004

Contents

Foreword

The paper focuses on the skilled manpower of a state as a fundamental resource that attracts foreign and domestic investors and attempts to analyse and study the influence of quality of labour and its composition on productivity (in 18 selected states of India). This study would also facilitate inter temporal and inter-firm comparison of input / output and productivity.

Suresh Chand Aggarwal has quantitatively constructed the labour quality index based on the methodology of Jorgenson, Gallop and Fraumen (JGF) and using the Tornquist Tranlog Index. The author, subtly, brings out spatial differences and temporal changes in labour quality for the rural and urban manufacturing sectors using the Usual Principal and Subsidiary Status (UPSS) of Employment based on the surveys of NSSO and Census.

The author goes a step further and focuses on inter-temporal and inter-sectoral changes in labour based on the educational profile of workers. The analysis suggests that the decline in the proportion of uneducated and not literate workers across all sectors, being highest in the primary sector, moderate in manufacturing, trade and transport and least in the tertiary sector, may be explained by the fact that the nature of labour demanded by a particular sector is what attracts labour towards it.

There are noticeable variations between states too – eg. Kerala is the only state in which the proportion of employment in manufacturing in urban areas has increased and the proportion of casual workers has fallen in every state except Assam.

Using the Urban and Rural Labour Quality Indices for regular manufacturing workers The author has effectively demonstrated that, while the former has a strong linkage with urban poverty of the state, no. of ITI's and the intensity of industrialization, the latter displays no such proven linkage. It is hoped that this paper paves the way for further research on labour quality and all its dimensions, since human resource is the magnet that attracts investment and a country like India cannot afford to overlook or underestimate its worth.

Arvind Virmani
Director & Chief Executive
ICRIER

April 2004

i

LABOUR QUALITY IN INDIAN MANUFACTURING
A STATE LEVEL ANALYSIS

Suresh Chand Aggarwal[*]

Abstract

The paper provides the educational composition of the manufacturing workers in the eighteen selected states of India during the last four NSSO rounds on Employment and Unemployment in India covering the period 1983 to 1999-2000. It also presents a labour quality index based on the Jorgenson, Gallop, and Fraumeni methodology for both the rural and urban sectors of the states. It finds that manufacturing workers are more literate today than they were in 1983. The labour quality indices show that the quality changes have been quite slow and there is a lot of variation among the states for both rural and urban sectors of the selected states. The association of the labour quality index with the state's characteristics is found to be weak but urban labour quality index has stronger links with human development index of the states, the urban poverty ratio of the state, the number of ITI's in a state, and the intensity of industrialization.

Key words: educational composition, labour quality index, manufacturing workers

* Satyawati College, Ashok Vihar, Delhi University, Delhi –110052 [sureshchag@ yahoo.com]

I   Introduction

With the opening of economy for external competition and active participation of foreign direct investment (FDI) as well as the phasing out of the QR regime, the attainment of higher level of competitiveness by Indian manufacturing sector has assumed major significance. In the endeavour of achieving higher economic growth, each state in India is vying for the attention of investors, both domestic and foreign. However, investors generally tend to march towards those states where a higher level of physical infrastructure and skilled manpower, which is adequately educated and trained in latest developments in technology, are available. They consider manpower as one of the most fundamental resource. High education and skill[1] levels have become essential factors in attracting investment from external sources; i.e. multinational corporations (MNCs). The quality of labour force and its composition is also the matter of concern in the context of productivity measurement, as it provides not only a more accurate indication of the contribution of labour to production but also the impact of compositional changes on productivity. It would be thus desirable to combine the changes in the number of workers and their composition so as to measure the labour input more accurately. It would facilitate inter-temporal as well as inter-firm comparisons of inputs (outputs) as well as productivity. Constructing such an aggregate index helps in relaxing the assumption of input homogeneity and would consider each labour input as heterogeneous. One such discrete index which is an approximation to the Divisia index (a continuous) and is most widely utilized 'superlative'[2] index is the Tornqvist-Theil translog index.

The measures of labour quality were constructed earlier by Denison (1962), and Jorgenson and Grilliches (1967) and more recently by Ho and Jorgenson (1999), Jorgenson and Stiroh (2000) and Fosgerau, et al (2002). These studies were undertaken in the context of industrialized countries. Most of the recent indices of quality of labour input are based

---

[1]   The meaning of skills has over the period widened. There is a tendency to include personal attributes, which once would not have been thought of in this manner (Payne, 2000). Skill has also been used to refer to general and technical education, and training (Singh, 2002; Agrawal and Naqvi, 2002; and Mathur and Mamgain, 2002).

[2]   Diewert (1976) established that the translog index is superlative by showing that it is exact for the homogeneous translog aggregate function.

on the methodology of (JGF) Jorgenson, Gallop, and Fraumeni (1987) and uses the Tornqvist translog index.

Ho and Jorgenson (1999) have expressed the *volume of labour input*, L; as a *translog index* of its individual components and the weights are given by the average shares of the components in the value of labour compensation. The growth rate of the aggregate labour volume index is defined as:

$$\Delta \ln L_w = \Sigma_l \, v_{ll} \, \Delta \ln L_l$$
$$v_{ll} = \tfrac{1}{2} \, [\, v_l \, (t) + v_l \, (t\text{-}1)]$$
$$\text{and} \qquad v_l = w_l^{\,L} \, L_l \, / \, \Sigma_l \, w_l^{\,L} \, L_l$$

where L_w is the weight adjusted aggregate labour,

$\quad$ L_l is labour of a particular education class,

$\quad$ l= 1,2,…..,n i.e. the number of education categories,

$\quad$ v_l is the value share of labour for the lth education category,

$\quad$ $w_l^{\,L}$ is the wage rate of labour for the lth education category,

$\quad$ Σ_l is the summation over all education categories.

Growth of labour volume L incorporates both growth in hours worked and improvement in labour quality. Since data on hours worked for each educational category of labour is not available, we assume that labour input for each category is proportional to hours worked and the proportion is same for all categories. It follows from this that the growth rate of the quality index Q^L can be expressed in the form:

$$\Delta \ln Q^L = \Sigma_l \, v_{ll} \, \Delta \ln L_l \; - \Delta \ln L$$

where $L = \Sigma_l \, L_l$

$\quad$ Q^L is the quality index of labour,

$\quad$ L is the total number of labour (unadjusted) of all education categories.

This is the difference between the percentage change in quality-adjusted labour and the percentage change in actual labour, summed over all categories. Using the methodology Fosgerau, et. al. (2002) and Ho and Jorgenson (1999) have estimated quality of workforce for Denmark and US respectively. Sailaja (1988) have obtained similar index for output, labour and price in the case of Indian railways. However, no such effort has been made for the Indian manufacturing labour force.

Though the data limitations generally make it difficult to quantify the level of skills in the labour force, yet the present paper attempts to construct a quality index for total, rural and urban sectors of each of the selected states for the 43rd, 50th and 55th rounds of NSSO with 1983 (38th round) equal to 100 so as to assess the spatial differences and temporal changes in labour quality. The NSSO 50th and 55th rounds provides information about marketable skills (about 30 types of skills), which the labour force possesses. The results indicate that more than 80 percent of the Indian population has no marketable skills whatsoever. We estimate the labour quality index for Indian states from both general and technical educational attainment of labour force. So in the present study, the components included in the aggregate index are the number of workers by education levels. The paper is organised as follows. In section II, we outline the data source and the methodology used. While section III contains the profile of the population of workers in India, the percentage distribution of manufacturing workers by level of education and employment category for major Indian States are presented in section IV. Section V attempts to provide a labour quality index based on JGF methodology and the conclusion is given in section VI.

II Data and Methodology

II.1 Data

The main source of data for the study is employment and unemployment surveys undertaken by the NSSO. The data relates to the previous four major rounds – 38th, 43rd, 50th and 55th conducted in 1983, 1987-88, 1993-94 and 1990-2000. It relates to both rural and urban sectors of the economy. The source of data for the population is Census of India (different years).

3

In these four major quinquennial rounds NSSO collected information from rural and urban households about their employment and unemployment status. The workers are classified on the basis of their activity status into usual status- principal as well as subsidiary; current weekly status and current daily status. Usual principal and subsidiary status (UPSS) is the most liberal and widely used of these concepts. It includes all workers who have worked for a longer time of the preceding 365 days in either the principal or in one or more subsidiary economic activity. On the basis of employment status, the workers are put in to mainly three categories- self employed in household enterprises, regular salaried/ wage employees and casual labour. NSSO basically used National Industrial Classification (NIC-1987) for classification of workers by industry. This entire information about the households (HHs), known as HH unit level data is made available by NSSO in the form of CD-ROMS.

There are however some data problems which need a mention. The educational categories in the 38th and 43rd round did not have a separate classification for Higher Secondary (Hr.Sec.) and was introduced for the first time in the 50th round. Hence the categories are not exactly comparable in the four rounds. For this reason, we combined the middle, secondary and Higher Secondary categories into a category of up to Higher Secondary for the purpose of our analysis. Secondly, data for smaller states and UT's is good at the aggregate level but at the disaggregate level of different categories of workers there is the problem of consistency. Similar problem one also encounters while working with any of the North – Eastern states including Assam and other disturbed areas. There the data collected by enumerators on the basis of the questionnaires are not as reliable and consistent as for other states.

II.2   Methodology

The data on manufacturing employment is essentially derived from the unit level record data of National Sample Survey (NSS) for the four quinquennial rounds of the 1980s and 1990s, [i.e., 38th round (1983), 43rd round (1987-88), 50th round (1993-94) and

55th round (1999-00)]. We estimated the number of workers in the manufacturing as follows:

i)   Firstly, the proportion of worker per thousand population was extracted directly from the unit level record data of NSS for the four categories, such as, rural male, rural female, urban male and urban female across 18 major Indian states.

ii)   Then, we obtained population figures for all these 18 states across the four categories mentioned earlier from census. Although census population is available only decennially, we interpolated population figures between decennial census to arrive at population numbers for the mid-year survey period, such as, 1983, 1987-88, 1993-94 and 1999-00.

iii)   Once we obtained the proportion of worker per thousand population and actual population numbers of 18 states across rural male, rural female, urban male and urban female, we multiply them to get the number of workers relating to these categories across 18 major Indian states.

iv)   We then compute the distribution of workers per 1000 workforce among industrial classification (one-digit) across each state from the unit record data of NSS and this proportion is carried to each state to arrive at state-level workers engaged in different industries (one-digit).

v)   Again working out the proportion of distribution of various employment categories, such as, self-employed, regular/salaried and casual employment from the NSS, we use this proportion to arrive at the number of workers in manufacturing by these employment categories.

vi)   Further, our next step involves computing the proportions of the distribution of manufacturing workers by different educational levels, such as, illiterate, primary, secondary, higher secondary, graduate, technical education, etc..

vii)   After obtaining this proportion, it is applied among the number of manufacturing workers across states under different employment status.

5

Thus we have obtained the educational profile of manufacturing workers by employment category for all the eighteen states.

However it may be mentioned that the above steps are taken to find out the educational distribution of manufacturing workers in both rural and urban areas for the states for all the four rounds. For India, the exercise has been restricted only to all workers for one digit industrial classification (and no employment category distribution).

The computation of the labour quality index is based on the JGF (1987) methodology and is explained in the introduction.

III   Profile of Workers Population (UPSS) in India

III.1   *Industrial Distribution of Workers (UPSS)*

The percentage distribution of all workers by broad economic sectors for different round is presented in table I and by complete industrial classification in appendix table A.I. It shows that at the all India level there is a fall in agriculture (of 8 percentage points) but a marginal increase in the secondary sector (2.4 points) and an increase of around 5.5 points in the tertiary sector. In rural areas we find a similar pattern to that of the all India level with a fall of 5 points in agriculture with a marginal increase of 2.2 points in secondary and of around 2.67 points in the tertiary sector. There is thus a tendency for rural labour to shift from agriculture to the secondary and the tertiary sectors. However, in urban India we find two noticeable differences. First even in secondary sector the workers proportion has reduced. Second, there is the predominance of the tertiary sector and it has increased from 52 percent to more than 59 percent.

Table I: Percentage Distribution of Rural and Urban Workers by Broad Economic Sectors- All India in different NSS rounds (UPSS)

Rural Workers (Male + Female)				
Round (Year)	38 Round (1983)	43 Round (1987-88	50 Round 1993-94)	55 Round (1999-2000)
Economic Sectors	Persons	Persons	Persons	Persons
Primary sector	81.14	78.18	78.43	76.23
Secondary sector	9.12	11.34	10.16	11.35
Tertiary sector	9.75	10.48	11.41	12.42
All Sectors	100	100	100	100
Urban Workers (Male + Female)				
Round	38 Round	43 Round	50 Round	55 Round
Economic Sectors	Persons	Persons	Persons	Persons
Primary sector	14.49	13.38	12.30	8.66
Secondary sector	33.47	33.54	32.10	32.14
Tertiary sector	52.04	53.08	55.60	59.20
All Sectors	100	100	100	100
Total Workers (Male + Female)				
Round	38 Round	43 Round	50 Round	55 Round
Economic Sectors	Persons	Persons	Persons	Persons
Primary sector	68.20	64.80	63.96	60.31
Secondary sector	13.84	15.92	14.96	16.25
Tertiary sector	17.95	19.27	21.08	23.45
All Sectors	100	100	100	100

Note: 1. UPSS is usual principal and subsidiary status.

2. Primary includes agriculture, forestry and fishing; Secondary includes mining, manufacturing, electricity and construction; and Tertiary includes trade, transport and other services.

Source: NSSO, 38th, 43rd, 50th and 55th rounds.

III.2 Distribution of Workers by Education Levels

The educational profile of workers by economic sectors at all India is given in tables II (T) for total, and by industry divisions in appendix tables A.II (R) and A.II (U) for rural and urban workers. We have divided the discussion into two parts: (i) inter temporal, and (ii) inter sectoral. The NSSO gives detailed information about the general and technical education of workers in the country. For our analysis, we have clubbed these classification into five categories – Not literate; literate upto primary (which includes

categories of literates through non-formal centres [LFS], literates but below primary (LBP), and primary); literate upto higher secondary (which includes middle level, secondary and higher secondary); graduates and above (includes graduates in agriculture, engineering/technology, medicine and others) and diploma holders (who are part of the upto primary and upto higher secondary categories). The first two categories of not literate and literate up to primary are together described as uneducated for the purpose of analysis in the paper. It may be mentioned that a separate category of higher secondary did not exist in 38th and 43rd rounds. It is, therefore convenient and prudent for comparison purposes that these categories be combined.

Inter temporal Trend*:* It is observed from table II (T) that there is a general tendency of a decline in the share of *uneducated* (not literate and upto primary) workers in the four rounds and a corresponding increase in the share of *educated* (i.e. upto higher secondary and graduate and above workers). The fall in the proportion of not literate is quite substantial in all the economic sectors - primary, secondary and tertiary of the economy. A similar trend is witnessed in the rural sector of the economy (table A.II (R)) where we notice a substantial fall in the proportion of not literate and a noticeable increase in the proportion of upto higher secondary educated workers in all major sectors. However, it is found that not-literate worker's proportions are highest in the major sectors of agriculture, manufacturing and construction and even in 1999-2000 3/4th of the total rural workers are either not-literate or literate upto primary level only. On the contrary, as is expected the proportion of such workers is only 44 percent in urban areas (table A.II (U)-last row). The urban workers upto higher secondary education level is the single largest category in all-major industries except agriculture. Thus, over the last four rounds, literacy among workers has increased but the proportion of graduates and diploma holders is still very low, especially among rural areas.

Inter sectoral Variation*:* A close look at the three tables shows that the extent of literacy is not uniform in all occupations. As expected the proportion of not literates is more in primary sector (table II (T)) and in agriculture, mining and construction (tables A.II (R) and A.II (U)) where relatively more unskilled labour is required. It is moderately

present in manufacturing, trade and transport and is the least in electricity, gas, etc. The scene is repeated in the rural and urban sectors with slightly lower percentages in the latter. It shows that it is the nature of labour demand that attracts a particular type of labour towards the sector.

Table II (T): Percentage Distribution of Total Workers Engaged in Various Industry Divisions by Educational Categories -All India   (UPSS)

Industry Divisions	NSSO Round (year)	Educational Categories				Total	Diploma holders as a Percent of Total
		Not Literate	Up to primary	Up to Higher Secondary	Graduates & above		
Primary sector	38 (1983)	69.09	21.37	9.17	0.36	100	0.246
	43 (87-88)	65.98	22.43	10.97	0.62	100	0.332
	50 (93-94)	61.67	22.93	14.54	0.85	100	0.390
	55 (99-00)	57.39	22.66	18.73	1.22	100	0.375
Secondary sector	38 (1983)	43.03	33.46	20.88	2.64	100	2.85
	43 (87-88)	43.19	31.87	21.60	3.35	100	2.96
	50 (93-94)	36.75	30.53	27.90	4.82	100	4.25
	55 (99-00)	33.16	28.29	33.04	5.51	100	5.20
Tertiary sector	38 (1983)	28.49	26.74	34.87	9.90	100	6.49
	43 (87-88)	25.67	27.40	35.55	11.38	100	5.82
	50 (93-94)	22.06	24.12	39.65	14.17	100	6.05
	55 (99-00)	19.81	20.78	42.79	16.62	100	4.94
All Sectors	38 (1983)	58.28	24.00	15.34	2.38	100	1.712
	43 (87-88)	54.51	24.90	17.43	3.16	100	1.819
	50 (93-94)	49.60	24.32	21.84	4.24	100	2.159
	55 (99-00)	44.72	23.10	26.63	5.54	100	1.917

Source: For 1983, GOI, Sarvekshana, Vol. XI, No. 4, April 1988, NSSO
For 1987-88, GOI, Sarvekshana, Special Number, September 1990, NSSO.
For 1993-94, GOI, Employment and Unemployment in India, Report Number 409, NSSO, March 1997.
For 1999-2000, GOI, Employment and Unemployment in India, Report Number 455, NSSO, December 2000.

IV   Manufacturing Workers in States by Level of Education

IV.1   *Trends in Manufacturing Workers in Indian States*

This section provides a brief description of proportion of total workers in manufacturing in different states in the last four round for total (table III), and rural and urban sectors (table A.III). It provides us information about the variation in the level of industrialisation across states over the period. It also explains how far the process of industrialisation or de-industrialisation has taken place in a particular state.

Table III: Workers in manufacturing as a percentage of total Workers in different NSSO rounds – by State   (UPSS)

Year	1983	1987-88	1993-94	1999-2000
States	TOTAL	TOTAL	TOTAL	TOTAL
AP	10.20	10.68	9.29	8.08
Assam	4.82	4.36	4.35	4.55
Bihar	7.39	6.49	4.93	7.33
Goa	12.64	12.74	10.77	10.75
Gujarat	12.15	13.76	15.32	12.14
Haryana	9.31	11.29	9.20	10.92
H Pradesh	3.44	4.59	3.28	3.96
Karnataka	10.60	12.01	10.76	10.64
Kerala	15.02	14.92	14.45	14.60
Madhya Pradesh	6.58	7.83	5.52	6.80
Maharashtra	11.43	11.79	11.23	11.39
Orissa	9.57	8.76	7.54	9.50
Punjab	10.59	12.45	10.24	10.87
Rajasthan	6.83	8.27	6.29	7.30
Tamil Nadu	16.54	18.87	18.14	19.14
Uttar Pradesh	9.74	8.95	9.32	10.92
W.Bengal	16.55	16.83	20.00	18.11
Delhi	27.05	25.66	27.17	24.95
India	10.64	11.16	10.66	10.89

Source: For 1983, GOI, Sarvekshana, Vol. XI, No. 4, April 1988, NSSO
For 1987-88, GOI, Sarvekshana, Special Number, September 1990, NSSO.
For 1993-94, GOI, Employment and Unemployment in India, Report Number 409, NSSO, March 1997.
For 1999-2000, GOI, Employment and Unemployment in India, Report Number 455, NSSO, December 2000.

Table III shows that in 1983 the extent of variation in the proportion of workers engaged in manufacturing is from 3.44 percent in Himachal Pradesh to 27.05 percent in

Delhi. If we exclude the smaller states of Delhi and Goa and the northeastern state of Assam for the problems already highlighted, we still find a lot of variation – it is from 6.58 for MP to 16.54 in TN. The proportions are 6.80 for MP and 19.14 for TN in 1999-2000, indicating that the gap in the intensity of industrial employment has increased over the years. The states with low proportion of employment in the manufacturing have been HP, Assam, MP, Rajasthan and Bihar. The states with relatively high level of manufacturing employment are W. Bengal, TN, Kerala and Delhi. In between these two extremes lie AP, Punjab, Maharashtra, Orissa, UP, Gujarat and Haryana. We observe a similar behaviour for rural and urban areas (table A.III), with a little less variation in rural level (from 3.76 percent in MP to 13.70 in Kerala in 1983 to 4.14 percent in MP to 13.7 percent in TN in 1999-2000) than the urban level. The level of urban industrial employment was not only quite high in 1983 in the four industrialised states of India-namely Gujarat, Maharashtra, TN and W. Bengal but the gap between rural and urban areas was also quite large. But in all the four states while the proportion of urban industrial employment has reduced, it has increased in the rural areas, thus narrowing down the gap. One can observe that there has been same spread of industrial employment in the rural areas in most of the major states except AP, Karnataka, and Kerala. On the contrary we notice that except Kerala, in all other states the proportion of employment in manufacturing in urban areas has fallen. This could be due to the faster spread of the service sector in the urban areas. It is also clear from table III that except the major states of TN, UP and W. Bengal and smaller states of HP and Haryana, in all other states the proportion of workers (UPSS) in manufacturing has generally reduced in 1999-2000 compared to 1983 as well as 1987-88.

IV.2 *Workers in Manufacturing by Status and Education*

Appendix tables A.IV (T), (R) & (U); A.V (T), (R) & (U) and A.VI (T), (R) & (U) contain information about the distribution of manufacturing workers in each state

separately for total, rural and urban areas by level of education on the basis of their employment category-casual workers; regular/ salaried employees and 'other' workers[3].

IV.2.1 Causal Workers

It is evident from table A.IV (T) that during the period 1983 to 1999-00, the proportion of not literate casual workers has fallen in every state except Assam. However even in 1999-00 more than 77 percent of the casual workers were uneducated and the percentage is even around 90 in some of the states. There is a lot of variation among states. While in states of Delhi, Goa, HP and Kerala the proportion reduced significantly and is low (less than 25 percent), in others like AP, Bihar, MP, Orissa and UP the proportion is still quite high (more than 60 percent).

It is clear from table A.IV (R) that in rural areas proportion of not literate casual workers has reduced over the four rounds in every state and that of other education levels has generally increased. It indicates that the casual labour in rural India and its states are now more literate (skilled). However, the share of uneducated is quite high among rural casual workers in the states of AP, Bihar, MP, and UP and is now quite low in Delhi, Goa, HP and Kerala.

Similar picture emerges for urban casual manufacturing workers (table A.IV (U)), where we find that the share of uneducated workers has reduced over the period. We now have more educated casual manufacturing workers in most of the states. The plausible explanations for the tendency could be the general increase in the literacy level of the states and high unemployment rates among educated inducing them to take up casual jobs.

---

[3] NSSO puts workers in three categories on the basis of their employment status: Casual wage labour, regular salaried/wage employee and self-employed persons. Casual wage labour is defined as a person who was casually engaged in other's farm or non-farm enterprises and in return, received wages according to the terms of the daily or periodic work contract. Regular salaried / wage employees are those persons who worked in other's farm or non-farm enterprises and in return, received salary or wages on a regular basis. Self-employed persons, on the other hand are those persons who operated their own farm or non-farm enterprises or were engaged independently in a profession or trade on own account or with one or a few partners. They have the autonomy and economic independence for carrying out their operation

The 'not literate' casual urban manufacturing workers are more in states of AP, Bihar, Karnataka MP, Maharashtra, Orissa, Rajasthan, and UP as compared to Assam, HP, Kerala and W. Bengal.

IV.2.2 Regular/ Salaried Workers

Table A.V (T) reveals that the proportion of not literate among regular/salaried employees is substantially lower in all states as compared to casual workers. The proportion has reduced considerably in many of the states and is only around 25 percent. But some of the states have shown a marginal increase in the 55th round as compared to the previous round. The proportion of educated has increased significantly from around 29.4 percent in 1983 to 47.56 percent in 1999-2000 at all India level.

The pattern of inter-temporal and inter-state variation for regular manufacturing employees in rural and urban sectors (table A.V (R) & (U)) is almost similar to those of casual manufacturing workers. While the proportion of uneducated among rural regular manufacturing workers (table A.V (R)) was 86 percent in 1983 (all India), it reduced to 69.6 percent in 1999-2000. Among states, there is a general increase in the educated regular manufacturing workers, except Assam. So regular/ salaried manufacturing workers were more literate in 1999-2000 than in 1983. This is true not only about general education but also about technical education.

The distribution of urban regular manufacturing workers (table A.V (U)) also depict the same picture. But the fall in the proportion of uneducated workers is more pronounced – the proportion is 45.5 percent in 1999-2000 and 65 percent in 1983, a fall of 19.5 points. There is a domination of educated workers and the increase among graduates and above is quite substantial as compared to rural areas. We thus, have more educated and trained (including diploma holders) regular workers in the urban India's manufacturing sector. Though the proportion of uneducated among urban manufacturing workers has reduced among all the major states yet it is quite high in few of the states like AP, MP, Bihar, Punjab, Orissa, Rajasthan, TN, UP and W. Bengal.

IV.2.3 'Other' Manufacturing Workers

As described earlier in the methodology, this category basically includes self-employed workers. The trends for total 'other' manufacturing workers is quite similar to the other two categories (table A.VI (T)). The proportion of uneducated has reduced significantly from 81 percent in 1983 to only 65 percent in 1999-00 at all India level. Across states, the proportion varies from 3/4th to 1/3rd in 1999-00. Though the proportion of educated 'other' workers has increased over the period, there is no substantial increase in the proportion of the diploma holders.

Table A.VI (R) clearly shows that like the other two categories of workers, the uneducated among the 'other' rural manufacturing workers also declined over the four rounds. But the proportion of the uneducated in 1999-2000 is still around 73 percent - though less than the casual rural manufacturing workers. Generally in all the states there is a fall in the proportion of 'not literate' workers but this fall is quite small in states of Bihar, MP, Orissa and W. Bengal as compared to other states. The variation in uneducated among states is evident (table A.VI (R)) from high proportions of rural manufacturing 'other' workers in AP, Bihar, MP, Karnataka, HP, Orissa, Rajasthan, UP and W. Bengal and low proportions in Kerala, Gujarat, Assam, HP and Maharashtra in 1999-2000 as well as in 1983.

Table A.VI (U) repeats the same story about the 'other' urban manufacturing workers in India and states. However, the proportion of uneducated 'other' workers is less in urban sector (52.5 percent) in 1999-2000 as compared to their rural counterparts (73 percent). The proportion is high not only of upto higher secondary category in urban sector but are also quite substantial for graduates and for diploma holders. The same is also true for the other two employment category i.e. casual and regular/ salaried workers.

It may however be highlighted that a close look at the distribution of workers by education for all the three categories of workers- casual, regular salaried and 'others' show that a few states like Assam, Bihar, Orissa and Punjab show a fall in the proportion of workers who are in the education category of upto Hr.Sec during the 50th and 55th round.

Assam and Punjab are the ones, which depict this tendency for all the three categories of workers. The main reason for this could be a low and falling percentage of the expenditure on secondary education of the total educational budget for the states of Assam, Bihar and Orissa and a significant fall in the proportion of expenditure on education to the total state budget of Punjab. Punjab spent 19.56 percent of the state budget on education in 1993-94 but it fell to 16.59 percent in 1998-99 and only 13.38 percent in 2001-02.[4] These states are also among those few states that show lower growth rates in State domestic product (SDP) and per capita SDP (PCSDP) in the 1990's as compared to 1980's (Bhattacharya and Sakthivel; 2004, pp. 1073). The two factors, low expenditure and low growth in PCSDP, might have reduced the supply of the high school educated labour. It is also observed that while Orissa and Assam show a stagnant share of the secondary sector in SDP, Punjab experienced a very slow growth of secondary and tertiary activities (Bhattacharya and Sakthivel; 2004, pp. 1076). One may also notice that Assam and Punjab experienced a slow growth in total manufacturing employment and a de-industrialization in urban sector. In fact in Punjab the manufacturing employment actually fell in the organized sector from 4.4 Lakhs in 1994-95 to 3.58 Lakhs in 2000-01 and an increase is witnessed only in the unorganized manufacturing sector from 5.516 Lakhs to 7.446 Lakhs. Thus the share of organized employment reduced from 44.4 percent to 32.5 percent during the period[5]. So in the face of less employment opportunities in the organized manufacturing sector and low skill requirements in the unorganized sector, the demand for high school educated workers may have reduced and the educated persons may have shifted to the service sector, which grew relatively faster because of low base as compared to other states.

We thus find that Indian manufacturing workers were more literate in 1999-2000 than in 1983 and the urban manufacturing workers are generally more literate than their counterpart in the rural areas. Two views can be taken on the increased share of educated which includes graduates and diploma holders among the manufacturing workers. One could argue that huge educated unemployment in the country is forcing the workers to join

---

[4] Source: Manpower Profile, IAMR, New Delhi; Different Issues and Budget-2002, Government of Punjab.

[5] Source: Computed from Annual Survey of Industries for Organised Sector and from Report No 434 (1994-95; August 1998) and 477 (2000-01; Sept.2002), NSSO, GOI on Unorganised Manufacturing Sector in India for the unorganized sector.

the manufacturing sector where there could be a mismatch of their skills. But one could also propose that such a trend may improve the labour quality and hence productivity of the Indian manufacturing workers.

V   Labour quality Index for regular manufacturing workers in Indian states

The labour quality index has been computed for regular/salaried manufacturing workers in rural and urban sectors of the selected eighteen Indian states. The methodology is similar to Jorgenson and Stiroh (2000) translog function. From the HHs unit data of NSSO for the last four rounds, we extracted the number of manufacturing workers by regular/salaried status and educational category for the individual states. Similarly average weekly nominal wage rate for each individual educational category has been computed for each round. The educational categories used for constructing the index for the rural sector are: i) not literate, ii) literate through non formal system and literate below primary (LFS and LBP), iii) primary, iv) middle, v) secondary, vi) graduates and vii) total workers. However, because of data limitations the wage rates could not be extracted for every educational category especially for graduates in engineering or medicine; etc. in the rural areas and are not included in the rural index. Since the category of 'other' graduates constitute the major proportion of graduates, their average weekly earnings have been computed and used.

The urban labour quality index has been constructed by using the following educational categories: i) not literate, ii) literate through non formal system and literate below primary (LFS and LBP), iii) primary, iv) middle, v) secondary, vi) graduates (in agriculture, in engineering/ technology, in medicine and others), and vii) total workers. Whenever the average weekly earnings for any educational category could not be calculated in any particular round of NSSO, we estimated it from the ratio of the wages of that particular category to the average wage of the total workers in other rounds and multiplied the ratio to the average wage of total workers in the missing round. From the estimates of the weekly earnings and the number of workers, we obtained the labour quality index by applying the JFG methodology. Since the index is basically constructed

16

from the wage and workers data, therefore any extraordinary fluctuation in data because of any limitation gets reflected in the labour quality index.

The Index: The labour quality index thus computed for rural and urban sectors is presented in table VII (R) and VII (U) along with few summary statistics and the rank of each state in different rounds. The rank pertains to the change in the quality index of the state.

V.1   Labour quality Index for Rural Manufacturing Workers

The labour quality index for rural salaried/ regular manufacturing workers [table VII (R)] shows that the average quality has improved by 4.79 per cent during the last four rounds. The index reveals large variation among states within each round but less variation across rounds. The coefficient of variation indicates that divergence took place in the labour quality among states till the 50th round but it has marginally reduced between the 50th and 55th round. States of Gujarat, Maharashtra, Kerala, Bihar and UP ranked higher in quality. On the other hand we have Orissa, Punjab, Rajasthan and W. Bengal who all have been constantly at the bottom with some of them even showing a decline in their labour quality. The states of MP and AP occupied the middle ranks. It can also be noticed that the maximum variation in ranks is experienced by the states of HP, Haryana, Assam, Karnataka, TN and Bihar. While the states of HP and Haryana improved their ranks considerably, the states of Assam and Karnataka lost it very significantly and Bihar and Maharashtra a bit moderately.

Table VII (R): Labour quality Index for Regular Salaried Manufacturing Employees (Rural)

States	38 round (1983)	43 round (1987-88)	50 round (1993-94)	55 round (1999-00)	Rank in 1987-88	Rank in 1993-94	Rank in 1999-00
AP	100	103.22	102.48	105.55	8	11	10
Assam	100	103.96	103.82	102.65	5	7	13
Bihar	100	104.19	103.72	108.15	3	8	8
Goa	100	89.74	58.79	69.39	17	17	17
Gujarat	100	106.29	111.43	112.43	1	2	2
H.P	100	100.20	107.07	115.54	13	4	1
Haryana	100	102.84	103.67	111.46	9	9	4

Karnataka	100	103.50	96.25	103.49	6	16	12
Kerala	100	104.05	107.05	110.48	4	5	5
Madhya Pradesh	100	102.71	103.62	106.27	10	10	9
Maharashtra	100	105.07	105.14	110.28	2	6	6
Orissa	100	98.54	102.44	102.01	14	12	15
Punjab	100	94.66	97.05	97.27	16	15	16
Rajasthan	100	98.18	101.73	102.31	15	13	14
Tamil Nadu	100	102.60	111.51	111.66	11	1	3
Uttar Pradesh	100	103.47	108.00	108.98	7	3	7
W.Bengal	100	100.38	101.16	103.54	12	14	11
Delhi	-	-	-	-			
Average Index of the selected 18 states	100	101.39	101.47	104.79			
Standard deviation of Index	0	4.17	11.75	10.28			
Coefficient of variation of the Index	0	4.11	11.58	9.81			

Source: Computed from NSSO, 38th, 43rd, 50th and 55th rounds- CD ROMS.

The possible reasons for such a large variation in quality index for different states are explored through its link with other characteristics of the states like a state's Human Development Index (HDI), the percentage of population below poverty line, the expenditure of the state on education as a proportion of total state expenditure, the rural literacy rate, the rural adult literacy rate, the per capita state domestic product and the intensity of industrialisation (measured by the proportion of workers in manufacturing) . The correlation matrix [Appendix A.VIII(R)] does not show significant relationship of labour quality index with any of these characteristics. Therefore the underlying behaviour can only be justified by the changes in the educational distribution [table A.V(R)] and the weekly wage earning.

V.2   *Labour quality Index for Urban Manufacturing Workers*

Table VII (U) shows the labour quality index for urban regular manufacturing workers. It indicates that their average quality has improved by 3.52 per cent over the rounds as compared to 4.79 per cent for their rural counterpart. The variation in quality has however increased, though it is less than the rural sector. The index varied from 108.9 for Rajasthan to 97.23 for Assam in 1987-88 and it is 116.9 for Karnataka and 80.33 for Assam in 1999-00. While the state of Karnataka, Delhi, TN and AP not only improved their quality significantly but also improved their rank.

Table VII (U): Labour quality Index for Regular Salaried Manufacturing Employees (Urban)

States	38 round (1983)	43 round (1987-88)	50 round (1993-94)	55 round (1999-00)	Rank in 1987-88	Rank in 1993-94	Rank in 1999-00
AP	100	100.05	104.63	109.30	14	9	5
Assam	100	97.23	76.08	80.33	18	18	18
Bihar	100	107.45	106.03	107.92	2	7	8
Delhi	100	104.91	105.33	111.63	4	8	2
Goa	100	103.47	86.19	90.22	5	17	16
Gujarat	100	102.23	104.16	107.02	8	11	9
H.P	100	98.39	100.04	103.28	15	15	12
Haryana	100	97.70	86.55	84.31	17	16	17
Karnataka	100	100.75	109.10	116.87	11	2	1
Kerala	100	100.45	101.46	102.90	13	13	13
Madhya Pradesh	100	106.09	108.72	108.13	3	3	7
Maharashtra	100	101.21	102.10	103.92	10	12	10
Orissa	100	101.83	110.47	102.13	9	1	14
Punjab	100	100.48	104.47	101.88	12	10	15
Rajasthan	100	108.89	108.28	110.19	1	4	4
Tamil Nadu	100	102.77	106.40	110.93	6	5	3
Uttar Pradesh	100	102.60	106.13	108.62	7	6	6
W.Bengal	100	98.38	100.84	103.80	16	14	11
Average Index of the selected 18 states	100	101.94	101.50	103.52			
Standard deviation of Index	0	3.29	9.23	9.53			
Coefficient of variation of the Index	0	3.22	9.10	9.21			
Correlation 43 (R & U)	0.03						
Correlation 50(R & U)	0.39						
Correlation 55(R & U)	0.34						

Source: Computed from NSSO, 38th, 43rd, 50th and 55th rounds- CD ROMS.

On the other extreme Haryana, Goa and Assam experienced a fall in their labour quality and obviously are at the bottom of the rankings. There are some states that improved the quality quite slowly and could not significantly improve their relative position. Such states are HP, Kerala, Maharashtra, Punjab and W. Bengal. The relationship between rural and urban quality index for the same round is found to be positive but weak [table VII (U)]. It reflects that the two labour quality indexes generally move in tandem in a round.

The link of urban labour quality index with other characteristics of the states is explored and the correlations are presented in Appendix table A.VIII (U). It shows that

unlike the rural sector, urban labour quality index has stronger links with the urban poverty ratio of the state (0.46), the number of ITI's in a state (0.41), and the intensity of industrialization (0.83). As expected the association is stronger for technical education (ITI's) than for the expenditure on total education. It emphasizes the role of technical education in labour quality development of the urban industrial workers. The expenditure on education has the weakest association with the index. The correlation results show that unlike rural areas intensity of industrialisation in the urban sector is the most important link. It is understandable, as we know that the intensity of industrialisation is very low in rural sectors of most of the selected states (table A.III). However a detailed analysis at the state level is required to find out the reasons for the underlying behaviour, which needs to be taken up in future research.

VI   Conclusion

The composition and quality of manufacturing labour force has acquired a new importance in the context of productivity measurement and its usefulness in finding the competitive advantage of a state in attracting investment. Ho and Jorgenson (1999), and Jorgenson and Stiroh (2000) have used the JGF (1987) methodology to estimate labour quality for the US economy.

The present exercise is a first attempt to construct a similar labour quality index for the manufacturing workers for the Indian states. The NSSO data on employment has been used to estimate both the number of workers in each educational category and the average nominal weekly wage rate for regular/salaried workers. The paper analyses the distribution of all manufacturing workers by employment categories and educational categories. The results show that despite a fall in the proportion of not-literate over the four rounds, even in 1999-2000 three-fourth of the rural workers and forty four percent of the urban workers were not literate in India.

The results of the analysis for the states clearly indicate that generally the manufacturing workers were more literate in 1999-00 than in 1983 but a lot of variation is found among the states – both in rural and urban areas. One also notices that as expected,

urban manufacturing workers are more literate than their rural counterparts. Similarly regular/ salaried workers are generally more literate than casual workers and 'other' workers. The labour quality index for rural and urban sectors also provide evidence that the quality of manufacturing workers has improved over the period. However the quality changes have been quite slow. The index reveals that except the two smaller states of HP and Goa, the index has consistently increased for all other selected states. During the period the states of MP, TN, Gujarat, UP and Orissa have achieved high ranks in labour quality changes. But the other extreme is the case of Punjab, W.Bengal, Maharashtra, Goa and AP who have been low in quality rankings. We also find that while some states like Haryana, HP, TN, Kerala, Maharashtra and Gujarat in case of rural workers and Karnataka, Delhi, TN, AP, UP, MP and Rajasthan for urban workers showed remarkable improvements, the others like Assam, Punjab and W.Bengal could not make much headway. A comparison of rural and urban quality index of states also shows that the improvement in quality index is more in urban sector for states of AP, Goa, Karnataka, MP, Punjab, Rajasthan.

Since the analysis could not find any strong linkage of the labour quality index with other characteristics of a state except the intensity of industrialisation in urban sector [appendix A.VIII (R) and (U)], e.g. HDI, the poverty ratio, PCSDP, educational expenditure as a percent to state budget etc, so a more detailed analysis at more disaggregate level may be attempted in future research. It may also be mentioned that the construction of labour quality index is very sensitive to the wage rate data for each state and educational category. The results are therefore to be viewed in the light of limitations of the NSSO data.

References

Agrawal Rashmi and Talmeez Fatma Naqvi (2002), " Skill Development in the Changing Global Context", *Indian Journal of Labour Economics*, Vol.45, No. 4, pp. 1105-19.

Bhattacharya B.B. and S. Sakthivel (2004), " Regional Growth and Disparity in India: Comparison of Pre and Post- Reform Decades", Economic and Political Weekly, Vol. 38(10), March, pp. 1071-77.

Central Statistical Organisation: Population of India, different years.

Denison, Edward F. (1962), " The sources of Economic Growth in the United States and the alternatives before US." *Supplementary paper 13*. New York: Committee for Economic Development.

Diewert, W.E. (1976)," Exact and Superlative Index Numbers," *Journal of Econometrics*, vol.4, pp.115-45.

Fosgerau, Mogens; et al (2002), " Measuring Educational Heterogeneity and Labor Quality: A Note," *Review of Income and Wealth*, 48 (2), June, pp. 261-69.

Ho, Mun S., and Dale W. Jorgenson (1999), " *The quality of the U.S. Workforce, 1948-95,"* manuscript, Harvard University.

Jorgenson, Dale W. and Grilliches (1967), " The Explanation of Productivity Change," *Review of Economic Studies*, 34 (3), pp. 249-83.

Jorgenson, Dale W. and Kevin J. Stirch (2000), " Raising the Speed Limit: U.S. Economic Growth in the Information Age," *Brookings paper on Economic Activity*, pp. 125-211.

Jorgenson,Dale W., Frank M.Gallop, and Barbara M. Fraumeni (1987), *" Productivity and U.S. Economic Growth,"* Cambridge, Harvard University Press.

Mathur, Ashok and Rajendra P. Mamgain (2002), " Technical Skills , Education and Economic Development in India", *Indian Journal of Labour Economics*, Vol.45, No. 4, pp. 1015-46.

National Sample Survey Organisation (1988), *Sarvekshana*, GOI, Vol. XI, No. 4, April.

National Sample Survey Organisation (1990), *Sarvekshana*, Special Number, September.

National Sample Survey Organisation (1997), *Employment and Unemployment in India*, Report Number 409, March.

National Sample Survey Organisation (2000), *Employment and Unemployment in India*, Report Number 455, December.

Payne, J (2000), " The Unbearable Lightness of Skill: The Changing Meaning of Skill in the UK Policy Discourses and Some Implications for Education and Training", *Journal of Education Policy,* Vol. 15, pp. 352-69.

Sailaja, M (1988), "*Productivity in the Services Sector: Indian Railways,"* Unpublished PhD thesis, Department of Economics, Delhi School of Economics, University of Delhi.

Singh Surjeet (2002), " Education Skills and Training: Some Perceptions", *Indian Journal of Labour Economics*, Vol.45, No. 4, pp. 1079-93.

Appendix Table A.I: Percentage Distribution of Rural and Urban Workers by Industry Division- All India in different NSS rounds (UPSS)

Rural Workers (Male + Female)				
Round (Year)	38 Round (1983)	43 Round (1987-88	50 Round 1993-94)	55 Round (1999-2000)
Industry Division	Persons	Persons	Persons	Persons
Agriculture	81.14	78.18	78.43	76.23
Mining & Quarrying	0.49	0.59	0.59	0.50
Manufacturing	6.78	7.22	7.00	7.40
Elec, Gas & Water	0.13	0.19	0.19	0.13
Construction	1.72	3.34	2.38	3.32
Trade, etc	3.49	4.02	4.28	5.13
Transport, etc	1.12	1.31	1.45	2.12
Other Services	5.14	5.15	5.67	5.17
All divisions	100.00	100.00	100.00	100.00
Urban Workers (Male + Female)				
Round	38 Round	43 Round	50 Round	55 Round
Ind. Div.	Persons	Persons	Persons	Persons
Agriculture	14.49	13.38	12.30	8.66
Mining & Quarrying	1.08	1.19	1.15	0.80
Manufacturing	26.78	25.97	23.63	22.71
Elec, Gas & Water	0.92	1.01	1.01	0.68
Construction	4.69	5.36	6.31	7.94
Trade, etc	18.51	19.03	19.40	26.97
Transport, etc	8.20	7.84	7.93	8.73
Other Services	25.33	26.21	28.27	23.51
All divisions	100.00	100.00	100.00	100.00
Total Workers (Male + Female)				
Round	38 Round	43 Round	50 Round	55 Round
Ind. Div.	Persons	Persons	Persons	Persons
Agriculture	68.20	64.80	63.96	60.31
Mining & Quarrying	0.60	0.72	0.72	0.57
Manufacturing	10.66	11.09	10.64	11.01
Elec, Gas & Water	0.28	0.36	0.37	0.26
Construction	2.30	3.76	3.24	4.41
Trade, etc	6.41	7.12	7.59	10.28
Transport, etc	2.49	2.66	2.87	3.68
Other Services	9.05	9.49	10.62	9.49
All divisions	100.00	100.00	100.00	100.00

Source: For 1983, GOI, Sarvekshana, Vol. XI, No. 4, April 1988, NSSO

For 1987-88, GOI, Sarvekshana, Special Number, September 1990, NSSO.

For 1993-94, GOI, Employment and Unemployment in India, Report Number 409, NSSO, March 1997.

For 1999-2000, GOI, Employment and Unemployment in India, Report Number 455, NSSO, December 2000.

Appendix Table A.II (R): Percentage Distribution of Rural Workers Engaged in Various Industry Divisions by Educational Categories (All Rounds)

(All India)   (UPSS)

Industry Divisions	NSSO Round (year)	Educational Categories				Total	Diploma holders as a percent of Total
		Not Literate	Up to primary	Up to Higher Secondary	Graduates & above		
Agriculture	38 (1983)	69.57	21.22	8.90	0.32	100	0.228
	43 (87-88)	66.33	22.37	10.73	0.58	100	0.309
	50 (93-94)	62.06	22.80	14.35	0.78	100	0.365
	55 (99-00)	57.55	22.69	18.62	1.14	100	0.358
Mining & Quarrying	38 (1983)	69.86	21.05	8.59	0.51	100	1.042
	43 (87-88)	66.08	22.67	9.98	1.28	100	0.676
	50 (93-94)	61.22	21.95	15.55	1.27	100	2.693
	55 (99-00)	54.37	24.69	20.32	0.61	100	0.954
Manufacturing	38 (1983)	51.18	33.92	14.16	0.74	100	1.388
	43 (87-88)	48.45	33.62	16.90	1.03	100	1.649
	50 (93-94)	44.58	32.49	21.34	1.58	100	1.818
	55 (99-00)	39.35	30.72	28.39	1.54	100	1.893
Electricity, Gas & water	38 (1983)	20.97	32.20	41.37	5.46	100	7.849
	43 (87-88)	10.80	31.33	52.54	5.33	100	7.514
	50 (93-94)	21.17	26.61	48.17	4.05	100	12.949
	55 (99-00)	11.75	18.11	63.78	6.35	100	11.014
Construction	38 (1983)	59.74	28.46	11.46	0.34	100	0.638
	43 (87-88)	65.84	22.71	10.80	0.65	100	0.861
	50 (93-94)	48.81	30.55	19.92	0.72	100	1.293
	55 (99-00)	44.56	29.60	24.89	0.96	100	1.222
Wh/Retail Trade, etc	38 (1983)	38.19	37.29	23.49	1.03	100	0.538
	43 (87-88)	34.84	37.17	26.33	1.65	100	0.866
	50 (93-94)	31.54	33.16	32.69	2.61	100	1.166
	55 (99-00)	24.53	30.33	41.79	3.35	100	1.580
Transport, etc	38 (1983)	38.36	32.42	27.54	1.68	100	3.681
	43 (87-88)	35.81	34.14	28.23	1.82	100	3.640
	50 (93-94)	29.76	32.09	35.76	2.39	100	2.149
	55 (99-00)	25.78	27.33	43.03	3.86	100	2.569
Other Services	38 (1983)	33.53	21.23	35.80	9.44	100	10.283
	43 (87-88)	30.08	20.29	38.39	11.23	100	9.548
	50 (93-94)	22.93	21.11	41.76	14.20	100	8.643
	55 (99-00)	23.24	15.66	41.18	19.92	100	6.798
All divisions	38 (1983)	64.89	22.90	11.37	0.85	100	0.869
	43 (87-88)	61.40	23.86	13.51	1.23	100	0.976
	50 (93-94)	56.43	24.14	17.71	1.72	100	1.063
	55 (99-00)	51.63	23.61	22.45	2.31	100	0.963

Source: For 1983, GOI, Sarvekshana, Vol. XI, No. 4, April 1988, NSSO
For 1987-88, GOI, Sarvekshana, Special Number, September 1990, NSSO.
For 1993-94, GOI, Employment and Unemployment in India, Report Number 409, NSSO, March 1997.
For 1999-2000, GOI, Employment and Unemployment in India, Report Number 455, NSSO, December 2000.

Appendix Table A.II (U): Percentage Distribution of Urban Workers Engaged in Various Industry Divisions by Educational Categories (All Rounds)

(All India) (UPSS)

| Industry Divisions | NSSO Round (year) | Educational Categories | | | | Total | Diploma holders as a percent of Total |
		Not Literate	Up to primary	Up to Higher Secondary	Graduates & above		
Agriculture	38 (1983)	58.00	25.00	15.60	1.41	100	0.678
	43 (87-88)	58.08	23.85	16.48	1.59	100	0.853
	50 (93-94)	52.96	25.90	18.85	2.29	100	0.970
	55 (99-00)	52.84	21.58	21.84	3.74	100	0.867
Mining & Quarrying	38 (1983)	44.26	21.06	29.45	5.23	100	11.668
	43 (87-88)	48.09	24.04	24.15	3.72	100	3.499
	50 (93-94)	31.38	23.12	31.80	13.70	100	10.021
	55 (99-00)	29.47	24.86	37.38	8.30	100	9.222
Manufacturing	38 (1983)	28.87	36.42	30.11	4.60	100	4.231
	43 (87-88)	26.05	36.58	30.72	6.65	100	4.898
	50 (93-94)	22.62	30.53	38.06	8.79	100	6.722
	55 (99-00)	19.76	25.91	42.80	11.52	100	11.071
Electricity, Gas & Water	38 (1983)	9.98	28.49	45.93	15.59	100	14.246
	43 (87-88)	9.07	18.37	56.39	16.17	100	18.113
	50 (93-94)	10.85	16.54	51.02	21.60	100	17.999
	55 (99-00)	2.14	8.85	57.95	31.07	100	18.842
Construction	38 (1983)	46.43	30.71	19.00	3.86	100	3.129
	43 (87-88)	44.83	30.15	21.10	3.91	100	2.784
	50 (93-94)	41.10	29.59	24.04	5.27	100	4.900
	55 (99-00)	37.19	29.29	28.57	4.95	100	2.791
Wh/Retail Trade, etc	38 (1983)	25.18	32.12	37.09	5.61	100	1.401
	43 (87-88)	21.81	33.96	37.56	6.67	100	1.196
	50 (93-94)	20.51	26.77	43.55	9.18	100	1.956
	55 (99-00)	17.11	23.96	47.96	10.97	100	3.023
Transport, etc	38 (1983)	28.21	30.36	35.75	5.68	100	5.052
	43 (87-88)	26.08	31.18	36.50	6.24	100	3.452
	50 (93-94)	24.33	26.24	41.09	8.34	100	5.819
	55 (99-00)	23.59	21.78	45.23	9.40	100	3.590
Other Services	38 (1983)	19.40	19.20	40.03	21.37	100	11.401
	43 (87-88)	17.66	19.83	38.49	24.03	100	10.406
	50 (93-94)	15.32	17.53	39.53	27.62	100	10.412
	55 (99-00)	13.96	11.73	37.73	36.58	100	9.382
All divisions	38 (1983)	30.83	28.58	31.85	8.74	100	5.209
	43 (87-88)	28.06	28.90	32.47	10.58	100	5.059
	50 (93-94)	25.23	24.97	36.56	13.24	100	6.070
	55 (99-00)	22.32	21.46	40.20	16.02	100	5.011

Source: For 1983, GOI, Sarvekshana, Vol. XI, No. 4, April 1988, NSSO
For 1987-88, GOI, Sarvekshana, Special Number, September 1990, NSSO.
For 1993-94, GOI, Employment and Unemployment in India, Report Number 409, NSSO, March 1997.
For 1999-2000, GOI, Employment and Unemployment in India, Report Number 455, NSSO, December 2000.

Appendix Table A.III: Workers in Manufacturing as a Percentage of Total Workers in Rural and Urban Areas in Different NSSO Rounds by State *(UPSS)*

State	1983		1987-88		1993-94		1999-2000	
	RURAL	URBAN	RURAL	URBAN	RURAL	URBAN	RURAL	URBAN
AP	7.66	22.45	7.80	22.91	6.91	19.09	5.64	18.19
Assam	3.80	13.94	3.78	9.57	3.57	10.92	4.30	6.37
Bihar	5.80	21.10	4.79	20.92	3.52	16.93	6.12	17.29
Delhi	7.48	28.94	11.16	26.77	51.37	24.34	26.48	24.84
Goa	10.24	17.58	11.90	14.37	11.19	10.14	9.26	12.56
Gujarat	5.43	32.70	7.17	33.06	9.16	31.12	6.75	25.22
Haryana	5.69	22.64	6.47	28.43	4.01	24.91	7.39	20.66
H Pradesh	3.05	9.61	4.23	10.79	3.27	3.48	3.62	8.88
Karnataka	5.84	26.05	7.21	26.93	6.65	23.18	5.47	24.21
Kerala	13.73	20.51	13.66	19.28	12.90	18.87	12.45	20.96
Madhya Pradesh	3.76	23.06	4.90	23.04	3.23	17.04	4.14	18.56
Maharashtra	4.67	29.42	5.21	28.02	4.99	24.87	4.68	24.34
Orissa	8.31	21.76	7.80	17.24	6.40	16.77	8.31	18.64
Punjab	5.58	26.72	7.77	27.20	4.88	24.25	5.77	22.64
Rajasthan	4.19	20.90	6.03	19.33	3.63	19.57	4.37	20.62
Tamil Nadu	10.84	32.34	13.16	33.70	12.93	30.07	13.70	28.61
Uttar Pradesh	6.96	25.27	6.20	23.09	6.40	23.66	7.65	24.95
W.Bengal	10.21	34.58	11.85	31.26	16.22	30.28	15.01	26.08
All India	6.78	26.70	7.22	25.97	7.00	23.63	7.40	22.71

Source: For 1983, GOI, Sarvekshana, Vol. XI, No. 4, April 1988, NSSO

For 1987-88, GOI, Sarvekshana, Special Number, September 1990, NSSO.

For 1993-94, GOI, Employment and Unemployment in India, Report Number 409, NSSO, March 1997.

For 1999-2000, GOI, Employment and Unemployment in India, Report Number 455, NSSO, December 2000.

Appendix Table A.IV (T): Percentage Distribution of Casual workers in Total Manufacturing by Education Level and by State (All Rounds)

| State | NSSO Round (year) | Different Educational Levels | | | | | Diploma Holders as a Percent of Total |
		Not Literate	Up to Primary	Up to Higher Secondary	Graduates & Above	Total	
A.P.	38 (1983)	73.15	18.36	7.80	0.68	100.00	0.49
	43 (87-88)	71.83	18.97	8.83	0.37	100.00	0.59
	50 (93-94)	69.73	20.37	9.38	0.51	100.00	0.61
	55 (99-00)	66.11	20.63	12.31	0.94	100.00	0.35
Assam	38 (1983)	43.66	38.26	17.92	0.17	100.00	0.46
	43 (87-88)	48.00	37.83	13.64	0.54	100.00	0.53
	50 (93-94)	48.14	38.87	12.74	0.25	100.00	1.09
	55 (99-00)	46.49	35.51	17.08	0.93	100.00	0.21
Bihar	38 (1983)	77.82	13.94	7.60	0.64	100.00	0.23
	43 (87-88)	75.76	14.92	9.10	0.22	100.00	0.10
	50 (93-94)	73.41	14.65	10.64	1.30	100.00	0.20
	55 (99-00)	75.31	13.13	10.85	0.72	100.00	0.21
Delhi	38 (1983)	44.85	26.27	24.40	4.48	100.00	1.90
	43 (87-88)	30.17	36.73	21.92	11.18	100.00	1.50
	50 (93-94)	35.84	24.62	32.98	6.56	100.00	1.18
	55 (99-00)	13.23	33.16	41.11	12.51	100.00	4.41
Goa	38 (1983)	64.95	17.67	15.56	1.82	100.00	4.97
	43 (87-88)	45.59	36.30	17.99	0.12	100.00	2.25
	50 (93-94)	46.91	25.02	25.37	2.69	100.00	0.14
	55 (99-00)	18.76	34.00	47.24	0.00	100.00	1.80
Gujarat	38 (1983)	52.59	31.68	14.72	1.01	100.00	1.27
	43 (87-88)	50.52	33.75	14.21	1.51	100.00	0.90
	50 (93-94)	48.77	32.34	17.15	1.74	100.00	1.03
	55 (99-00)	38.56	30.05	29.51	1.88	100.00	1.35
Haryana	38 (1983)	56.06	25.98	17.63	0.33	100.00	1.25
	43 (87-88)	54.05	27.69	17.29	0.97	100.00	1.14
	50 (93-94)	50.99	20.14	26.43	2.44	100.00	1.23
	55 (99-00)	46.66	30.33	21.99	1.02	100.00	0.65
H Pradesh	38 (1983)	46.62	32.03	21.20	0.15	100.00	3.13
	43 (87-88)	41.82	38.17	19.74	0.27	100.00	1.86
	50 (93-94)	39.66	39.91	19.93	0.50	100.00	0.91
	55 (99-00)	24.84	39.86	34.79	0.52	100.00	2.38
Karnataka	38 (1983)	61.75	25.40	11.90	0.94	100.00	0.55
	43 (87-88)	61.43	25.09	12.95	0.53	100.00	0.30
	50 (93-94)	60.52	21.36	17.35	0.78	100.00	0.58
	55 (99-00)	52.36	21.05	24.68	1.90	100.00	0.62
Kerala	38 (1983)	23.10	55.63	20.94	0.33	100.00	1.15
	43 (87-88)	19.15	53.59	27.04	0.22	100.00	1.21
	50 (93-94)	11.68	48.34	39.43	0.55	100.00	1.39
	55 (99-00)	10.11	40.57	48.48	0.84	100.00	2.77
Madhya Pradesh	38 (1983)	64.27	25.85	8.97	0.91	100.00	0.59
	43 (87-88)	63.70	24.84	10.19	1.27	100.00	0.36

28

	50 (93-94)	62.36	24.53	11.49	1.61	100.00	0.73
	55 (99-00)	61.08	25.54	12.10	1.29	100.00	0.34
Maharashtra	38 (1983)	48.75	30.18	19.72	1.35	100.00	1.84
	43 (87-88)	50.36	30.93	16.75	1.96	100.00	1.53
	50 (93-94)	47.19	26.32	24.27	2.22	100.00	1.56
	55 (99-00)	36.49	28.39	32.57	2.54	100.00	1.09
Orissa	38 (1983)	67.40	26.22	6.09	0.28	100.00	0.75
	43 (87-88)	66.33	26.05	7.44	0.18	100.00	0.69
	50 (93-94)	69.17	22.69	7.78	0.36	100.00	0.36
	55 (99-00)	63.81	23.69	11.98	0.52	100.00	0.17
Punjab	38 (1983)	53.84	27.04	17.17	1.95	100.00	1.40
	43 (87-88)	46.36	27.76	23.98	1.89	100.00	1.05
	50 (93-94)	48.12	24.29	25.72	1.87	100.00	0.74
	55 (99-00)	48.81	26.52	23.15	1.52	100.00	0.93
Rajasthan	38 (1983)	64.36	22.51	12.27	0.86	100.00	0.30
	43 (87-88)	70.32	18.36	10.30	1.02	100.00	0.46
	50 (93-94)	61.51	21.46	15.11	1.92	100.00	0.80
	55 (99-00)	54.24	25.64	18.14	1.98	100.00	0.45
Tamil Nadu	38 (1983)	51.09	36.12	12.13	0.66	100.00	1.12
	43 (87-88)	52.09	35.87	11.53	0.51	100.00	0.79
	50 (93-94)	46.23	35.94	16.98	0.85	100.00	0.89
	55 (99-00)	37.58	33.10	28.05	1.27	100.00	1.35
Uttar Pradesh	38 (1983)	67.16	20.98	10.88	0.98	100.00	0.49
	43 (87-88)	69.08	18.99	10.80	1.13	100.00	0.51
	50 (93-94)	65.59	18.30	14.79	1.33	100.00	0.44
	55 (99-00)	60.62	18.17	19.50	1.71	100.00	0.58
W.Bengal	38 (1983)	49.99	36.17	12.63	1.21	100.00	1.17
	43 (87-88)	52.83	36.36	9.58	1.23	100.00	0.82
	50 (93-94)	49.44	37.24	12.10	1.23	100.00	0.69
	55 (99-00)	43.91	35.33	18.54	2.22	100.00	0.49
All India	38 (1983)	59.06	27.68	12.35	0.91	100.00	0.91
	43 (87-88)	59.33	27.46	12.24	0.97	100.00	0.73
	50 (93-94)	56.31	26.64	15.95	1.10	100.00	0.62
	55 (99-00)	51.29	25.91	21.21	1.59	100.00	0.81

Source: NSSO, 38th, 43rd, 50th and 55th rounds CD ROMS.

Appendix Table A.IV (R): Percentage Distribution of Rural Casual workers in Manufacturing by Education Level and by State (All Rounds)

| States | NSSO Round (year) | Different Educational Levels | | | | Total | Diploma holders as a percent of Total |
		Not Literate	Up to primary	Up to Higher Secondary	Graduates & above		
		84.51	12.48	2.91	0.10	100.00	0.09
	43 (87-88)	81.85	13.92	4.18	0.05	100.00	0.16
	50 (93-94)	77.69	16.45	5.75	0.11	100.00	0.18
	55 (99-00)	73.00	18.10	8.50	0.40	100.00	0.31
Assam	38 (1983)	60.14	33.59	6.27	0.00	100.00	0.39
	43 (87-88)	53.99	37.29	8.49	0.23	100.00	0.34
	50 (93-94)	51.22	39.11	9.54	0.13	100.00	0.33
	55 (99-00)	47.13	36.56	15.80	0.52	100.00	0.11
Bihar	38 (1983)	86.70	8.99	4.21	0.10	100.00	0.07
	43 (87-88)	83.47	10.63	5.75	0.15	100.00	0.14
	50 (93-94)	81.02	12.05	6.71	0.22	100.00	0.16
	55 (99-00)	78.97	12.30	8.54	0.20	100.00	0.16
Delhi	38 (1983)	64.24	17.88	17.88	0.00	100.00	0.00
	43 (87-88)	21.71	59.34	9.47	9.47	100.00	0.00
	50 (93-94)	0.00	0.00	0.00	0.00	0.00	0.00
	55 (99-00)	0.73	77.80	21.17	0.29	100.00	0.57
Goa	38 (1983)	69.49	12.62	15.96	1.92	100.00	5.06
	43 (87-88)	44.04	36.46	19.50	0.00	100.00	2.30
	50 (93-94)	46.80	23.82	26.44	2.94	100.00	0.16
	55 (99-00)	28.76	28.89	42.35	0.00	100.00	0.00
Gujarat	38 (1983)	66.46	25.81	7.46	0.27	100.00	0.34
	43 (87-88)	65.10	25.86	8.86	0.17	100.00	0.46
	50 (93-94)	59.40	27.64	12.36	0.59	100.00	0.54
	55 (99-00)	51.42	28.17	20.05	0.37	100.00	0.38
Haryana	38 (1983)	68.69	19.41	11.78	0.12	100.00	0.60
	43 (87-88)	69.36	23.45	6.98	0.21	100.00	0.22
	50 (93-94)	66.83	20.81	12.35	0.02	100.00	0.19
	55 (99-00)	47.31	31.00	21.13	0.56	100.00	0.29
H Pradesh	38 (1983)	54.39	29.26	16.12	0.23	100.00	1.45
	43 (87-88)	43.50	37.39	18.90	0.21	100.00	1.79
	50 (93-94)	39.59	40.20	19.79	0.42	100.00	0.91
	55 (99-00)	24.37	40.23	35.10	0.30	100.00	2.43
Karnataka	38 (1983)	76.41	18.56	4.96	0.07	100.00	0.17
	43 (87-88)	74.46	19.04	6.40	0.11	100.00	0.12
	50 (93-94)	72.62	19.16	7.87	0.35	100.00	0.03
	55 (99-00)	67.42	18.44	13.85	0.29	100.00	0.18
Kerala	38 (1983)	25.84	55.40	18.51	0.24	100.00	0.88
	43 (87-88)	21.23	54.77	23.90	0.10	100.00	1.02
	50 (93-94)	13.34	49.35	37.02	0.28	100.00	1.36
	55 (99-00)	11.92	40.09	47.31	0.68	100.00	2.25
Madhya Pradesh	38 (1983)	82.23	15.38	2.26	0.13	100.00	0.19
	43 (87-88)	80.39	16.06	3.36	0.18	100.00	0.14
	50 (93-94)	76.64	18.35	4.89	0.12	100.00	0.09

	55 (99-00)	68.09	24.05	7.47	0.39	100.00	0.10
Maharashtra	38 (1983)	70.00	22.79	7.10	0.11	100.00	0.46
	43 (87-88)	65.51	25.31	8.86	0.32	100.00	0.41
	50 (93-94)	60.39	24.75	14.62	0.24	100.00	0.25
	55 (99-00)	51.50	27.65	20.18	0.67	100.00	0.58
Orissa	38 (1983)	73.30	23.55	3.16	0.00	100.00	0.09
	43 (87-88)	72.27	23.29	4.42	0.01	100.00	0.74
	50 (93-94)	73.89	20.48	5.50	0.12	100.00	0.12
	55 (99-00)	67.57	22.64	9.64	0.16	100.00	0.03
Punjab	38 (1983)	67.11	22.53	9.80	0.57	100.00	0.64
	43 (87-88)	61.55	22.00	14.76	1.68	100.00	0.87
	50 (93-94)	65.83	20.74	13.43	0.00	100.00	0.34
	55 (99-00)	56.74	24.54	18.23	0.50	100.00	0.80
Rajasthan	38 (1983)	78.86	15.28	5.58	0.27	100.00	0.00
	43 (87-88)	79.08	13.05	7.60	0.27	100.00	0.54
	50 (93-94)	68.77	21.04	9.97	0.22	100.00	0.23
	55 (99-00)	63.71	22.25	13.34	0.70	100.00	0.12
Tamil Nadu	38 (1983)	65.92	28.11	5.78	0.19	100.00	0.35
	43 (87-88)	62.69	29.88	7.38	0.06	100.00	0.29
	50 (93-94)	57.26	30.64	11.80	0.31	100.00	0.49
	55 (99-00)	51.50	30.21	18.00	0.29	100.00	0.83
Uttar Pradesh	38 (1983)	78.20	15.69	5.64	0.46	100.00	0.22
	43 (87-88)	75.46	16.21	7.89	0.44	100.00	0.33
	50 (93-94)	72.10	14.87	12.64	0.40	100.00	0.22
	55 (99-00)	66.72	15.95	16.44	0.88	100.00	0.28
W.Bengal	38 (1983)	66.46	28.74	4.61	0.18	100.00	0.24
	43 (87-88)	66.58	27.39	5.75	0.28	100.00	0.81
	50 (93-94)	58.76	33.50	7.53	0.21	100.00	0.32
	55 (99-00)	51.60	35.23	12.63	0.54	100.00	0.05
All India	38 (1983)	73.50	20.77	5.55	0.18	100.00	0.26
	43 (87-88)	70.76	21.74	7.29	0.21	100.00	0.38
	50 (93-94)	66.94	22.81	10.20	0.05	100.00	0.02
	55 (99-00)	61.01	23.87	14.66	0.46	100.00	0.37

Source: NSSO, 38th, 43rd, 50th and 55th rounds CD ROMS

Appendix Table A.IV (U): Percentage Distribution of Urban Casual workers in Manufacturing by Education Level and by State (All Rounds)

| State | NSSO Round (year) | Different Educational Levels | | | | Total | Diploma holders as a percent of Total |
		Not Literate	Up to primary	Up to Higher Secondary	Graduates & above		
A.P.	38 (1983)	59.02	25.69	13.89	1.41	100.00	0.99
	43 (87-88)	56.40	26.73	15.99	0.87	100.00	1.26
	50 (93-94)	56.70	26.80	15.33	1.17	100.00	1.32
	55 (99-00)	55.02	24.71	18.45	1.82	100.00	0.41
Assam	38 (1983)	26.97	42.99	29.70	0.34	100.00	0.53
	43 (87-88)	34.59	39.04	25.15	1.22	100.00	0.96
	50 (93-94)	23.81	36.95	38.02	1.21	100.00	7.12
	55 (99-00)	42.50	28.99	25.03	3.48	100.00	0.84
Bihar	38 (1983)	61.35	23.12	13.89	1.64	100.00	0.52
	43 (87-88)	55.02	26.45	18.12	0.41	100.00	0.00
	50 (93-94)	58.24	19.84	18.49	3.44	100.00	0.26
	55 (99-00)	57.39	17.18	22.16	3.26	100.00	0.49
Delhi	38 (1983)	41.63	27.66	25.48	5.23	100.00	2.22
	43 (87-88)	32.80	29.71	25.78	11.71	100.00	1.97
	50 (93-94)	35.84	24.62	32.98	6.56	100.00	1.18
	55 (99-00)	15.84	23.82	45.28	15.06	100.00	5.21
Goa	38 (1983)	36.44	49.34	13.03	1.19	100.00	4.37
	43 (87-88)	55.53	35.23	8.33	0.92	100.00	1.98
	50 (93-94)	47.78	34.09	17.27	0.86	100.00	0.00
	55 (99-00)	17.14	34.83	48.03	0.00	100.00	2.09
Gujarat	38 (1983)	40.13	36.95	21.24	1.68	100.00	2.10
	43 (87-88)	31.76	43.91	21.09	3.24	100.00	1.46
	50 (93-94)	32.39	39.60	24.53	3.49	100.00	1.78
	55 (99-00)	27.94	31.60	37.33	3.12	100.00	2.15
Haryana	38 (1983)	42.75	32.90	23.80	0.56	100.00	1.94
	43 (87-88)	37.74	32.21	28.28	1.77	100.00	2.12
	50 (93-94)	45.33	19.91	31.46	3.30	100.00	1.60
	55 (99-00)	43.37	26.92	26.35	3.36	100.00	2.46
H Pradesh	38 (1983)	32.16	37.19	30.65	0.00	100.00	6.27
	43 (87-88)	23.53	46.62	28.89	0.97	100.00	2.53
	50 (93-94)	41.37	32.84	23.48	2.31	100.00	0.91
	55 (99-00)	33.61	32.75	28.92	4.72	100.00	1.42
Karnataka	38 (1983)	48.51	31.58	18.18	1.73	100.00	0.90
	43 (87-88)	48.95	30.88	19.22	0.94	100.00	0.48
	50 (93-94)	47.98	23.64	27.16	1.22	100.00	1.15
	55 (99-00)	37.80	23.58	35.16	3.46	100.00	1.04
Kerala	38 (1983)	14.89	56.30	28.20	0.60	100.00	1.98
	43 (87-88)	12.00	49.51	37.84	0.66	100.00	1.88
	50 (93-94)	8.35	46.30	44.25	1.10	100.00	1.47
	55 (99-00)	4.80	41.96	51.91	1.32	100.00	4.32
Madhya Pradesh	38 (1983)	50.83	33.70	13.99	1.49	100.00	0.88
	43 (87-88)	49.75	32.17	15.90	2.18	100.00	0.55

	50 (93-94)	46.19	31.54	18.97	3.30	100.00	1.46
	55 (99-00)	47.59	28.40	21.01	3.00	100.00	0.81
Maharashtra	38 (1983)	37.42	34.12	26.45	2.01	100.00	2.57
	43 (87-88)	39.32	35.03	22.50	3.16	100.00	2.34
	50 (93-94)	35.09	27.77	33.11	4.03	100.00	2.76
	55 (99-00)	25.88	28.91	41.34	3.87	100.00	1.46
Orissa	38 (1983)	54.47	32.10	12.54	0.89	100.00	2.19
	43 (87-88)	51.93	32.74	14.76	0.57	100.00	0.57
	50 (93-94)	57.27	28.25	13.53	0.95	100.00	0.97
	55 (99-00)	50.01	27.57	20.59	1.83	100.00	0.70
Punjab	38 (1983)	39.91	31.77	24.91	3.40	100.00	2.20
	43 (87-88)	36.54	31.49	29.95	2.02	100.00	1.16
	50 (93-94)	31.15	27.69	37.50	3.66	100.00	1.11
	55 (99-00)	32.65	30.57	33.18	3.61	100.00	1.20
Rajasthan	38 (1983)	56.27	26.55	16.00	1.18	100.00	0.47
	43 (87-88)	52.01	29.47	15.93	2.58	100.00	0.29
	50 (93-94)	52.66	21.97	21.38	3.99	100.00	1.50
	55 (99-00)	41.33	30.26	24.68	3.72	100.00	0.90
Tamil Nadu	38 (1983)	37.80	43.29	17.82	1.09	100.00	1.80
	43 (87-88)	35.43	45.29	18.05	1.23	100.00	1.58
	50 (93-94)	33.14	42.23	23.14	1.50	100.00	1.38
	55 (99-00)	27.35	35.22	35.44	2.00	100.00	1.74
Uttar Pradesh	38 (1983)	54.36	27.11	16.96	1.57	100.00	0.82
	43 (87-88)	54.71	25.25	17.36	2.69	100.00	0.92
	50 (93-94)	50.38	26.32	19.80	3.49	100.00	0.95
	55 (99-00)	44.32	24.11	27.67	3.91	100.00	1.37
W.Bengal	38 (1983)	27.78	46.19	23.43	2.59	100.00	2.41
	43 (87-88)	29.25	51.73	16.15	2.87	100.00	0.83
	50 (93-94)	31.15	44.56	21.06	3.23	100.00	1.42
	55 (99-00)	30.41	35.50	28.91	5.17	100.00	1.26
All India	38 (1983)	43.75	35.00	19.56	1.70	100.00	1.60
	43 (87-88)	42.57	35.85	19.51	2.08	100.00	1.24
	50 (93-94)	40.26	32.41	24.64	2.69	100.00	1.53
	55 (99-00)	36.16	29.10	31.41	3.34	100.00	1.48

Source: NSSO, 38th, 43rd, 50th and 55th rounds CD ROMS

Appendix Table A.V (T): Percentage Distribution of Total Regular/Salaried workers in Manufacturing by Education Level and by State (All Rounds)

| State | NSSO Round (year) | Different Educational Levels | | | | Total | Diploma holders as a percent of Total |
		Not Literate	Up to primary	Up to Higher Secondary	Graduates & above		
A.P.	38 (1983)	48.81	29.26	19.69	2.24	100.00	3.18
	43 (87-88)	45.27	29.91	22.50	2.32	100.00	3.93
	50 (93-94)	42.31	29.62	22.81	5.26	100.00	4.70
	55 (99-00)	42.58	24.50	26.58	6.33	100.00	2.78
Assam	38 (1983)	34.32	37.97	25.63	2.09	100.00	1.76
	43 (87-88)	19.77	43.13	34.61	2.48	100.00	1.79
	50 (93-94)	15.76	35.43	46.40	2.41	100.00	5.41
	55 (99-00)	27.67	35.48	31.77	5.08	100.00	0.79
Bihar	38 (1983)	50.17	24.80	22.43	2.60	100.00	1.00
	43 (87-88)	37.72	24.76	29.05	8.48	100.00	5.77
	50 (93-94)	40.25	19.82	33.89	6.04	100.00	5.83
	55 (99-00)	42.97	18.87	30.06	8.11	100.00	4.19
Delhi	38 (1983)	31.13	25.44	35.40	8.03	100.00	4.93
	43 (87-88)	24.14	27.17	34.04	14.64	100.00	3.72
	50 (93-94)	23.21	29.29	37.83	9.67	100.00	1.70
	55 (99-00)	10.78	20.39	47.24	21.59	100.00	6.79
Goa	38 (1983)	26.56	34.55	30.84	8.06	100.00	12.00
	43 (87-88)	20.36	37.14	34.75	7.75	100.00	9.02
	50 (93-94)	23.59	11.63	55.15	9.63	100.00	8.73
	55 (99-00)	1.81	19.46	67.40	11.33	100.00	11.44
Gujarat	38 (1983)	24.89	44.85	26.54	3.72	100.00	3.89
	43 (87-88)	22.36	42.68	28.03	6.93	100.00	3.57
	50 (93-94)	16.58	38.35	36.88	8.20	100.00	6.96
	55 (99-00)	12.84	22.07	54.19	10.90	100.00	5.56
Haryana	38 (1983)	28.35	35.07	34.90	1.69	100.00	4.31
	43 (87-88)	28.23	34.91	33.56	3.30	100.00	3.09
	50 (93-94)	26.96	21.43	45.13	6.49	100.00	5.41
	55 (99-00)	14.09	28.70	47.27	9.94	100.00	6.46
H Pradesh	38 (1983)	44.71	25.43	27.47	2.39	100.00	5.05
	43 (87-88)	25.41	44.83	27.79	1.98	100.00	2.01
	50 (93-94)	38.68	33.54	25.31	2.47	100.00	1.58
	55 (99-00)	18.86	27.70	47.22	6.22	100.00	3.72
Karnataka	38 (1983)	34.93	33.69	28.36	3.02	100.00	5.01
	43 (87-88)	30.85	34.67	31.36	3.12	100.00	3.09
	50 (93-94)	27.91	24.70	40.04	7.35	100.00	6.27
	55 (99-00)	16.16	21.43	50.26	12.15	100.00	8.39
Kerala	38 (1983)	15.63	52.30	29.85	2.21	100.00	3.31
	43 (87-88)	11.42	45.60	40.64	2.34	100.00	4.39
	50 (93-94)	9.49	43.85	43.85	2.80	100.00	4.41
	55 (99-00)	6.50	36.73	53.62	3.15	100.00	5.71
Madhya Pradesh	38 (1983)	43.73	34.91	17.74	3.63	100.00	3.33

34

	43 (87-88)	30.57	32.97	27.79	8.66	100.00	6.58
	50 (93-94)	32.78	28.89	29.33	8.99	100.00	5.78
	55 (99-00)	25.60	29.09	33.90	11.41	100.00	5.35
Maharashtra	38 (1983)	20.58	32.46	40.22	6.74	100.00	6.26
	43 (87-88)	18.82	36.47	37.11	7.60	100.00	7.42
	50 (93-94)	18.91	21.88	48.74	10.47	100.00	10.95
	55 (99-00)	11.72	24.82	53.11	10.36	100.00	6.53
Orissa	38 (1983)	44.51	32.64	20.81	2.04	100.00	3.26
	43 (87-88)	30.95	37.35	26.18	5.52	100.00	6.93
	50 (93-94)	22.93	26.30	40.40	10.37	100.00	12.50
	55 (99-00)	31.53	28.77	33.65	6.05	100.00	5.93
Punjab	38 (1983)	35.29	33.00	29.12	2.60	100.00	1.86
	43 (87-88)	23.66	32.58	39.46	4.30	100.00	2.13
	50 (93-94)	20.35	27.59	46.45	5.61	100.00	1.66
	55 (99-00)	21.42	32.99	40.83	4.76	100.00	1.36
Rajasthan	38 (1983)	46.54	30.39	20.91	2.16	100.00	1.53
	43 (87-88)	41.87	31.32	20.99	5.81	100.00	3.00
	50 (93-94)	37.66	28.29	29.13	4.92	100.00	3.85
	55 (99-00)	32.55	27.23	33.55	6.67	100.00	2.33
Tamil Nadu	38 (1983)	33.51	41.81	22.01	2.67	100.00	3.77
	43 (87-88)	28.98	44.01	23.84	3.17	100.00	5.20
	50 (93-94)	26.00	38.68	29.99	5.33	100.00	5.61
	55 (99-00)	20.40	33.04	40.57	5.99	100.00	6.00
Uttar Pradesh	38 (1983)	52.25	27.79	17.59	2.36	100.00	1.31
	43 (87-88)	45.54	29.08	21.18	4.20	100.00	2.20
	50 (93-94)	41.13	26.34	26.76	5.77	100.00	3.21
	55 (99-00)	37.88	25.11	28.27	8.74	100.00	2.19
W.Bengal	38 (1983)	24.80	42.80	26.80	5.60	100.00	4.36
	43 (87-88)	25.05	46.50	22.14	6.32	100.00	2.14
	50 (93-94)	28.79	39.53	25.13	6.55	100.00	3.56
	55 (99-00)	25.30	31.82	32.91	9.97	100.00	2.67
All India	38 (1983)	35.50	35.06	25.73	3.70	100.00	3.68
	43 (87-88)	30.76	36.33	27.63	5.28	100.00	4.40
	50 (93-94)	28.76	30.92	33.45	6.86	100.00	4.23
	55 (99-00)	25.24	27.20	38.82	8.74	100.00	4.60

Source: NSSO, 38th, 43rd, 50th and 55th rounds CD ROMS

Appendix Table A.V (R): Percentage Distribution of Rural Regular/Salaried workers in Manufacturing by Education Level and by State (All Rounds)

State	NSSO Round (year)	Different Educational Levels				Total	Diploma holders as a percent of Total
		Not Literate	Up to primary	Up to Higher Secondary	Graduates & above		
A.P.	38 (1983)	67.07	24.27	8.27	0.38	100.00	0.71
	43 (87-88)	58.98	26.22	14.13	0.67	100.00	2.18
	50 (93-94)	60.75	26.01	12.01	1.22	100.00	1.78
	55 (99-00)	56.30	24.48	17.72	1.51	100.00	1.03
Assam	38 (1983)	45.58	37.35	15.81	1.26	100.00	1.49
	43 (87-88)	26.80	44.81	27.43	0.96	100.00	2.57
	50 (93-94)	24.92	41.81	32.16	1.11	100.00	0.75
	55 (99-00)	33.65	35.40	28.83	2.12	100.00	0.78
Bihar	38 (1983)	75.61	15.25	8.89	0.24	100.00	0.29
	43 (87-88)	61.62	18.86	18.76	0.76	100.00	1.19
	50 (93-94)	63.34	19.56	17.05	0.05	100.00	0.89
	55 (99-00)	59.20	20.73	19.14	0.94	100.00	3.12
Delhi	38 (1983)	33.52	0.00	66.48	0.00	100.00	0.00
	43 (87-88)	23.47	36.22	30.07	10.24	100.00	0.00
	50 (93-94)	23.20	29.60	46.60	0.60	100.00	0.60
	55 (99-00)	2.54	38.81	58.32	0.33	100.00	0.79
Goa	38 (1983)	24.99	28.63	37.99	8.39	100.00	11.04
	43 (87-88)	23.81	46.23	29.96	0.00	100.00	7.73
	50 (93-94)	19.78	10.48	58.56	11.18	100.00	5.84
	55 (99-00)	2.59	18.54	66.54	12.32	100.00	14.12
Gujarat	38 (1983)	41.12	37.75	20.62	0.51	100.00	1.56
	43 (87-88)	35.42	35.61	24.47	4.49	100.00	3.76
	50 (93-94)	27.70	33.60	33.29	5.40	100.00	4.08
	55 (99-00)	20.37	25.01	49.89	4.73	100.00	3.36
Haryana	38 (1983)	41.11	34.84	24.05	0.00	100.00	1.40
	43 (87-88)	47.25	37.32	14.38	1.04	100.00	0.00
	50 (93-94)	47.32	17.67	34.87	0.14	100.00	4.80
	55 (99-00)	15.01	47.91	32.37	4.70	100.00	1.29
H Pradesh	38 (1983)	50.60	25.01	21.94	2.44	100.00	3.20
	43 (87-88)	43.44	39.95	16.06	0.54	100.00	1.46
	50 (93-94)	41.99	35.93	20.86	1.21	100.00	1.47
	55 (99-00)	19.84	28.19	49.97	2.01	100.00	3.21
Karnataka	38 (1983)	50.97	37.05	11.39	0.59	100.00	1.26
	43 (87-88)	44.45	35.09	19.83	0.62	100.00	0.12
	50 (93-94)	39.43	45.02	14.87	0.68	100.00	0.43
	55 (99-00)	32.52	32.77	33.53	1.18	100.00	1.96
Kerala	38 (1983)	19.82	53.62	25.86	0.70	100.00	2.13
	43 (87-88)	16.67	47.46	35.51	0.36	100.00	3.54
	50 (93-94)	10.30	49.56	39.49	0.65	100.00	3.39
	55 (99-00)	10.47	36.67	51.04	1.82	100.00	3.41
Madhya Pradesh	38 (1983)	63.64	28.90	7.06	0.39	100.00	0.75
	43 (87-88)	59.87	28.64	10.32	1.17	100.00	0.60

	50 (93-94)	57.82	28.74	12.58	0.86	100.00	0.55
	55 (99-00)	49.14	33.10	16.04	1.72	100.00	1.61
Maharashtra	38 (1983)	38.97	37.15	22.82	1.06	100.00	2.59
	43 (87-88)	30.45	39.13	28.38	2.04	100.00	3.54
	50 (93-94)	36.47	25.75	35.95	1.82	100.00	3.29
	55 (99-00)	19.36	28.17	49.75	2.72	100.00	4.77
Orissa	38 (1983)	68.35	24.05	7.18	0.42	100.00	1.25
	43 (87-88)	59.66	31.33	8.93	0.07	100.00	4.11
	50 (93-94)	55.64	27.94	15.79	0.63	100.00	1.06
	55 (99-00)	59.71	25.31	14.60	0.38	100.00	0.03
Punjab	38 (1983)	51.04	27.06	20.96	0.94	100.00	0.48
	43 (87-88)	16.27	31.02	47.29	5.42	100.00	2.62
	50 (93-94)	29.83	25.77	42.37	2.03	100.00	1.82
	55 (99-00)	21.20	32.94	43.86	1.99	100.00	1.84
Rajasthan	38 (1983)	54.08	27.35	15.73	2.83	100.00	2.10
	43 (87-88)	56.82	24.37	18.02	0.78	100.00	1.51
	50 (93-94)	40.63	35.02	23.41	0.94	100.00	3.38
	55 (99-00)	42.91	26.50	29.55	1.04	100.00	0.53
Tamil Nadu	38 (1983)	48.47	38.71	12.38	0.44	100.00	1.26
	43 (87-88)	39.57	46.12	14.05	0.25	100.00	1.26
	50 (93-94)	34.78	38.16	22.87	4.18	100.00	2.88
	55 (99-00)	24.81	37.85	36.35	0.99	100.00	4.70
Uttar Pradesh	38 (1983)	67.83	21.36	9.60	1.22	100.00	0.65
	43 (87-88)	52.48	30.35	16.21	0.96	100.00	0.80
	50 (93-94)	55.10	21.80	21.04	2.06	100.00	1.60
	55 (99-00)	46.87	23.74	26.64	2.76	100.00	1.27
W.Bengal	38 (1983)	52.19	35.62	11.05	1.15	100.00	1.00
	43 (87-88)	47.97	39.40	11.77	0.86	100.00	1.27
	50 (93-94)	49.26	37.20	12.75	0.79	100.00	1.06
	55 (99-00)	41.80	38.18	19.11	0.90	100.00	0.18
All India	38 (1983)	56.36	30.07	12.79	0.78	100.00	1.14
	43 (87-88)	46.49	34.33	18.14	1.04	100.00	1.78
	50 (93-94)	45.24	32.06	20.97	1.73	100.00	1.88
	55 (99-00)	39.06	30.50	28.73	1.71	100.00	1.99

Source: NSSO, 38th, 43rd, 50th and 55th rounds CD ROMS

Appendix Table A.V (U): Percentage Distribution of Urban Regular/Salaried workers in Manufacturing by Education Level and by State (All Rounds)

State	NSSO Round (year)	Different Educational Levels				Total	Diploma holders as a percent of Total
		Not Literate	Up to primary	Up to Higher Secondary	Graduates & above		
A.P.	38 (1983)	36.11	32.73	27.63	3.54	100.00	4.90
	43 (87-88)	37.23	32.07	27.40	3.29	100.00	4.96
	50 (93-94)	33.83	31.28	27.78	7.11	100.00	6.04
	55 (99-00)	32.67	24.52	32.99	9.82	100.00	4.05
Assam	38 (1983)	19.77	38.77	38.31	3.16	100.00	2.11
	43 (87-88)	12.27	41.35	42.27	4.11	100.00	0.97
	50 (93-94)	7.45	29.63	59.32	3.60	100.00	9.63
	55 (99-00)	7.69	35.75	41.57	14.99	100.00	0.83
Bihar	38 (1983)	37.10	29.70	29.39	3.81	100.00	1.37
	43 (87-88)	27.43	27.29	33.48	11.80	100.00	7.74
	50 (93-94)	31.63	19.91	40.17	8.28	100.00	7.67
	55 (99-00)	31.91	17.60	37.50	12.99	100.00	4.93
Delhi	38 (1983)	31.09	25.85	34.91	8.16	100.00	5.01
	43 (87-88)	24.17	26.84	34.19	14.80	100.00	3.85
	50 (93-94)	23.21	29.18	34.72	12.89	100.00	2.09
	55 (99-00)	11.50	18.79	46.28	23.43	100.00	7.31
Goa	38 (1983)	27.90	39.58	24.75	7.78	100.00	12.82
	43 (87-88)	17.97	30.81	38.07	13.15	100.00	9.91
	50 (93-94)	31.47	14.01	48.11	6.41	100.00	14.71
	55 (99-00)	0.98	20.43	68.30	10.29	100.00	8.62
Gujarat	38 (1983)	21.73	46.23	27.69	4.34	100.00	4.34
	43 (87-88)	18.52	44.76	29.08	7.65	100.00	3.52
	50 (93-94)	12.57	40.05	38.17	9.20	100.00	7.99
	55 (99-00)	9.71	20.84	55.98	13.46	100.00	6.48
Haryana	38 (1983)	25.34	35.13	37.45	2.08	100.00	5.00
	43 (87-88)	21.86	34.11	39.98	4.05	100.00	4.13
	50 (93-94)	20.76	22.57	48.25	8.42	100.00	5.60
	55 (99-00)	13.61	18.80	54.95	12.64	100.00	9.13
H Pradesh	38 (1983)	28.11	26.61	43.05	2.23	100.00	10.28
	43 (87-88)	13.16	48.15	35.75	2.95	100.00	2.38
	50 (93-94)	10.41	13.22	63.18	13.19	100.00	2.57
	55 (99-00)	15.29	25.94	37.23	21.53	100.00	5.61
Karnataka	38 (1983)	30.16	32.69	33.41	3.74	100.00	6.13
	43 (87-88)	26.60	34.54	34.96	3.90	100.00	4.02
	50 (93-94)	26.37	21.98	43.40	8.24	100.00	7.05
	55 (99-00)	13.76	19.77	52.71	13.76	100.00	9.33
Kerala	38 (1983)	9.63	50.41	35.58	4.38	100.00	5.00
	43 (87-88)	6.50	43.85	45.46	4.20	100.00	5.18
	50 (93-94)	8.78	38.82	47.70	4.70	100.00	5.30
	55 (99-00)	2.99	36.77	55.90	4.34	100.00	7.74
Madhya Pradesh	38 (1983)	34.27	37.75	22.81	5.16	100.00	4.56
	43 (87-88)	24.75	33.83	31.27	10.15	100.00	7.77

	50 (93-94)	22.43	28.96	36.26	12.35	100.00	7.94
	55 (99-00)	21.90	28.46	36.71	12.93	100.00	5.94
Maharashtra	38 (1983)	17.58	31.70	43.05	7.67	100.00	6.85
	43 (87-88)	16.63	35.97	38.75	8.65	100.00	8.15
	50 (93-94)	15.04	21.02	51.56	12.38	100.00	12.64
	55 (99-00)	10.47	24.27	53.66	11.61	100.00	6.82
Orissa	38 (1983)	32.16	37.08	27.87	2.89	100.00	4.30
	43 (87-88)	20.37	39.57	32.53	7.53	100.00	7.98
	50 (93-94)	14.50	25.87	46.75	12.88	100.00	15.45
	55 (99-00)	22.03	29.94	40.07	7.96	100.00	7.91
Punjab	38 (1983)	30.60	34.76	31.55	3.09	100.00	2.27
	43 (87-88)	27.98	33.48	34.89	3.64	100.00	1.85
	50 (93-94)	17.57	28.13	47.65	6.66	100.00	1.61
	55 (99-00)	21.48	33.00	39.96	5.55	100.00	1.23
Rajasthan	38 (1983)	42.07	32.19	23.98	1.76	100.00	1.18
	43 (87-88)	33.89	35.03	22.58	8.49	100.00	3.79
	50 (93-94)	36.25	25.08	31.86	6.82	100.00	4.07
	55 (99-00)	27.34	27.60	35.56	9.50	100.00	3.23
Tamil Nadu	38 (1983)	26.23	43.32	26.70	3.75	100.00	4.99
	43 (87-88)	22.45	42.71	29.88	4.97	100.00	7.64
	50 (93-94)	21.49	38.95	33.65	5.92	100.00	7.02
	55 (99-00)	17.67	30.06	43.18	9.08	100.00	6.80
Uttar Pradesh	38 (1983)	43.75	31.31	21.96	2.99	100.00	1.67
	43 (87-88)	43.01	28.62	22.99	5.38	100.00	2.71
	50 (93-94)	34.88	28.37	29.32	7.43	100.00	3.93
	55 (99-00)	32.85	25.87	29.19	12.09	100.00	2.71
W.Bengal	38 (1983)	19.82	44.11	29.66	6.41	100.00	4.97
	43 (87-88)	20.73	47.84	24.09	7.34	100.00	2.31
	50 (93-94)	20.76	40.44	29.99	8.81	100.00	4.54
	55 (99-00)	20.35	29.91	37.05	12.69	100.00	3.41
All India	38 (1983)	28.25	36.80	30.23	4.71	100.00	4.56
	43 (87-88)	25.49	37.00	30.81	6.70	100.00	5.28
	50 (93-94)	22.66	30.50	38.08	8.77	100.00	5.10
	55 (99-00)	19.63	25.87	42.91	11.59	100.00	5.66

Source: NSSO, 38th, 43rd, 50th and 55th rounds CD ROMS

Appendix Table A.VI (T): Percentage Distribution of Total 'Other' workers in Manufacturing by Education Level and by State (All Rounds)

| State | NSSO Round (year) | Different Educational Levels | | | | Total | Diploma holders as a percent of Total |
		Not Literate	Up to Primary	Up to Higher Secondary	Graduates & above		
A.P.	38 (1983)	56.14	30.42	12.56	0.88	100.00	0.85
	43 (87-88)	52.77	30.34	16.06	0.83	100.00	0.96
	50 (93-94)	52.73	29.46	16.36	1.45	100.00	1.42
	55 (99-00)	49.89	25.46	22.20	2.45	100.00	0.97
Assam	38 (1983)	34.83	43.93	21.12	0.11	100.00	1.57
	43 (87-88)	25.66	44.99	28.69	0.66	100.00	1.89
	50 (93-94)	23.73	40.26	34.29	1.72	100.00	3.01
	55 (99-00)	30.67	34.98	29.60	4.75	100.00	0.68
Bihar	38 (1983)	61.04	24.46	13.71	0.79	100.00	0.85
	43 (87-88)	59.11	21.37	19.04	0.48	100.00	0.62
	50 (93-94)	57.38	20.54	20.49	1.59	100.00	0.54
	55 (99-00)	57.74	20.47	18.93	2.87	100.00	1.39
Delhi	38 (1983)	32.07	27.04	31.24	9.65	100.00	2.81
	43 (87-88)	21.31	29.57	31.25	17.87	100.00	2.41
	50 (93-94)	19.96	24.14	40.18	15.72	100.00	3.84
	55 (99-00)	10.29	22.01	50.11	17.59	100.00	4.85
Goa	38 (1983)	11.24	46.86	36.31	5.58	100.00	15.87
	43 (87-88)	23.83	45.42	30.03	0.71	100.00	5.35
	50 (93-94)	27.36	21.84	41.09	9.70	100.00	11.63
	55 (99-00)	4.18	28.19	66.96	0.66	100.00	6.37
Gujarat	38 (1983)	28.64	40.58	28.52	2.26	100.00	2.82
	43 (87-88)	29.69	42.67	23.55	4.09	100.00	2.02
	50 (93-94)	23.70	36.22	33.93	6.16	100.00	3.71
	55 (99-00)	16.25	28.49	48.64	6.63	100.00	3.33
Haryana	38 (1983)	34.35	37.80	27.18	0.67	100.00	1.93
	43 (87-88)	40.01	35.92	21.36	2.72	100.00	1.60
	50 (93-94)	41.95	18.71	36.29	3.05	100.00	2.68
	55 (99-00)	17.25	35.99	38.24	8.53	100.00	3.40
H Pradesh	38 (1983)	53.70	24.59	21.32	0.39	100.00	3.53
	43 (87-88)	39.32	40.42	19.30	0.96	100.00	1.45
	50 (93-94)	41.23	35.76	22.19	0.83	100.00	0.89
	55 (99-00)	26.07	30.25	38.79	4.89	100.00	3.19
Karnataka	38 (1983)	41.47	39.09	18.33	1.11	100.00	1.18
	43 (87-88)	39.58	36.51	22.50	1.41	100.00	0.52
	50 (93-94)	40.18	35.90	22.21	1.71	100.00	0.68
	55 (99-00)	27.66	29.30	38.85	4.18	100.00	2.10
Kerala	38 (1983)	18.06	54.88	26.34	0.73	100.00	1.62
	43 (87-88)	13.97	48.25	37.13	0.66	100.00	2.34
	50 (93-94)	10.50	47.38	40.66	1.45	100.00	2.45
	55 (99-00)	7.76	38.45	51.83	1.97	100.00	3.47

40

Madhya Pradesh	38 (1983)	50.13	35.52	13.19	1.16	100.00	1.59
	43 (87-88)	53.05	31.59	13.49	1.87	100.00	0.56
	50 (93-94)	49.18	28.69	18.97	3.16	100.00	1.67
	55 (99-00)	41.62	30.81	22.30	5.27	100.00	1.74
Maharashtra	38 (1983)	29.49	38.75	29.12	2.64	100.00	3.51
	43 (87-88)	27.42	39.22	28.98	4.38	100.00	2.96
	50 (93-94)	29.14	26.56	39.24	5.06	100.00	4.34
	55 (99-00)	18.67	29.61	45.86	5.86	100.00	3.70
Orissa	38 (1983)	58.65	32.86	8.06	0.43	100.00	0.73
	43 (87-88)	55.85	33.24	10.63	0.28	100.00	3.22
	50 (93-94)	53.89	31.02	14.09	1.00	100.00	0.68
	55 (99-00)	57.61	25.08	16.16	1.14	100.00	0.31
Punjab	38 (1983)	36.03	33.71	27.47	2.79	100.00	1.81
	43 (87-88)	21.83	33.60	38.96	5.61	100.00	2.45
	50 (93-94)	25.37	25.41	44.55	4.68	100.00	2.21
	55 (99-00)	18.90	31.42	41.92	7.76	100.00	1.79
Rajasthan	38 (1983)	51.90	31.82	15.21	1.07	100.00	0.33
	43 (87-88)	54.08	27.62	15.86	2.44	100.00	1.03
	50 (93-94)	43.19	29.45	23.89	3.47	100.00	1.11
	55 (99-00)	38.94	25.52	30.69	4.84	100.00	1.05
Tamil Nadu	38 (1983)	38.21	44.61	16.14	1.04	100.00	1.77
	43 (87-88)	35.30	46.41	17.15	1.14	100.00	1.58
	50 (93-94)	32.05	41.95	23.92	2.07	100.00	1.77
	55 (99-00)	24.61	37.91	35.31	2.17	100.00	2.06
Uttar Pradesh	38 (1983)	60.87	24.60	13.03	1.49	100.00	0.70
	43 (87-88)	53.04	28.24	16.88	1.84	100.00	0.83
	50 (93-94)	49.67	24.99	22.20	3.14	100.00	1.03
	55 (99-00)	44.04	24.72	27.25	4.00	100.00	1.27
W.Bengal	38 (1983)	39.20	41.66	17.28	1.85	100.00	1.53
	43 (87-88)	41.53	42.66	14.00	1.82	100.00	1.13
	50 (93-94)	43.31	39.37	15.69	1.64	100.00	0.88
	55 (99-00)	36.73	37.09	23.51	2.67	100.00	0.51
All India	38 (1983)	45.34	35.59	17.61	1.46	100.00	1.51
	43 (87-88)	42.26	36.09	19.61	2.04	100.00	1.44
	50 (93-94)	40.33	32.68	24.20	2.79	100.00	1.72
	55 (99-00)	34.98	30.01	31.18	3.84	100.00	1.73

Source: NSSO, 38th, 43rd, 50th and 55th rounds CD ROMS

Appendix Table A.VI (R): Percentage Distribution of Rural 'Other' workers in Manufacturing by Education Level and by State (All Rounds)

State	NSSO Round (year)	Different Educational Levels				Total	Diploma holders as a percent of Total
		Not Literate	Up to primary	Up to Higher Secondary	Graduates & above		
A.P.	38 (1983)	62.33	28.47	8.86	0.35	100.00	0.39
	43 (87-88)	59.37	28.05	12.36	0.22	100.00	0.52
	50 (93-94)	60.43	26.51	12.53	0.53	100.00	0.71
	55 (99-00)	56.78	24.44	17.36	1.42	100.00	0.74
Assam	38 (1983)	39.29	45.07	15.63	0.00	100.00	1.76
	43 (87-88)	28.09	45.19	26.33	0.39	100.00	2.15
	50 (93-94)	28.45	41.12	29.25	1.17	100.00	0.63
	55 (99-00)	34.16	35.75	28.02	2.06	100.00	0.70
Bihar	38 (1983)	65.37	22.31	11.96	0.36	100.00	0.91
	43 (87-88)	65.17	18.22	16.21	0.39	100.00	0.82
	50 (93-94)	63.13	19.04	17.57	0.26	100.00	0.74
	55 (99-00)	63.04	20.02	16.59	0.36	100.00	1.47
Delhi	38 (1983)	39.41	0.00	60.59	0.00	100.00	0.00
	43 (87-88)	0.00	66.41	0.00	33.59	100.00	0.00
	50 (93-94)	43.98	36.33	19.69	0.00	100.00	0.00
	55 (99-00)	1.24	41.01	57.00	0.75	100.00	0.83
Goa	38 (1983)	8.86	28.15	55.30	7.70	100.00	20.27
	43 (87-88)	25.59	45.52	28.89	0.00	100.00	5.75
	50 (93-94)	13.17	21.02	50.26	15.55	100.00	7.52
	55 (99-00)	5.63	30.14	64.22	0.00	100.00	0.00
Gujarat	38 (1983)	32.55	41.56	25.49	0.41	100.00	2.45
	43 (87-88)	44.03	36.92	18.13	0.92	100.00	1.04
	50 (93-94)	32.89	34.26	29.55	3.31	100.00	2.22
	55 (99-00)	24.27	29.71	44.17	1.84	100.00	2.70
Haryana	38 (1983)	37.58	39.01	23.41	0.00	100.00	1.55
	43 (87-88)	55.40	33.19	10.36	1.05	100.00	0.00
	50 (93-94)	63.64	11.21	25.00	0.15	100.00	1.59
	55 (99-00)	19.01	54.42	24.29	2.28	100.00	0.55
H Pradesh	38 (1983)	57.69	24.17	17.69	0.45	100.00	2.42
	43 (87-88)	43.20	39.77	16.39	0.64	100.00	1.26
	50 (93-94)	42.98	37.23	19.36	0.43	100.00	0.77
	55 (99-00)	27.85	31.82	38.36	1.98	100.00	2.52
Karnataka	38 (1983)	45.78	41.64	12.17	0.41	100.00	1.00
	43 (87-88)	47.64	34.76	17.03	0.57	100.00	0.11
	50 (93-94)	44.24	42.66	12.35	0.74	100.00	0.00
	55 (99-00)	35.62	33.20	30.02	1.15	100.00	1.06
Kerala	38 (1983)	19.82	54.78	24.80	0.61	100.00	1.61
	43 (87-88)	16.38	48.70	34.67	0.25	100.00	2.42
	50 (93-94)	10.87	49.78	38.40	0.94	100.00	2.49
	55 (99-00)	10.66	37.59	50.37	1.39	100.00	2.35

42

Madhya Pradesh	38 (1983)	58.94	32.83	7.83	0.40	100.00	1.68
	43 (87-88)	63.33	27.74	8.17	0.75	100.00	0.29
	50 (93-94)	60.60	26.69	11.96	0.75	100.00	0.64
	55 (99-00)	51.59	31.86	14.64	1.91	100.00	0.99
Maharashtra	38 (1983)	38.11	39.98	21.22	0.69	100.00	2.95
	43 (87-88)	33.74	37.96	26.06	2.25	100.00	2.05
	50 (93-94)	39.66	26.57	32.65	1.12	100.00	2.30
	55 (99-00)	24.16	30.65	42.10	3.09	100.00	5.23
Orissa	38 (1983)	61.75	31.97	6.13	0.15	100.00	0.15
	43 (87-88)	60.09	31.82	8.03	0.06	100.00	3.37
	50 (93-94)	57.30	29.34	12.53	0.82	100.00	0.69
	55 (99-00)	61.77	24.03	13.73	0.48	100.00	0.03
Punjab	38 (1983)	45.17	31.70	22.41	0.72	100.00	0.65
	43 (87-88)	19.14	34.80	39.03	7.03	100.00	3.34
	50 (93-94)	37.48	24.31	38.21	0.00	100.00	2.48
	55 (99-00)	21.27	36.36	39.59	2.77	100.00	1.85
Rajasthan	38 (1983)	55.44	31.63	12.25	0.68	100.00	0.23
	43 (87-88)	62.19	24.23	13.11	0.47	100.00	1.19
	50 (93-94)	45.86	32.97	20.17	0.99	100.00	0.94
	55 (99-00)	47.05	25.94	26.00	1.02	100.00	0.46
Tamil Nadu	38 (1983)	44.87	43.23	11.40	0.49	100.00	1.20
	43 (87-88)	41.75	45.54	12.65	0.06	100.00	0.67
	50 (93-94)	38.08	40.27	20.41	1.24	100.00	1.35
	55 (99-00)	26.86	40.79	31.80	0.54	100.00	1.76
Uttar Pradesh	38 (1983)	67.02	22.77	9.11	1.10	100.00	0.50
	43 (87-88)	55.94	29.29	14.03	0.74	100.00	0.70
	50 (93-94)	57.62	22.22	19.50	0.66	100.00	0.54
	55 (99-00)	48.47	23.85	26.12	1.56	100.00	0.89
W.Bengal	38 (1983)	48.75	39.21	11.41	0.64	100.00	0.75
	43 (87-88)	48.72	38.94	11.66	0.68	100.00	1.16
	50 (93-94)	49.45	37.62	12.43	0.50	100.00	0.66
	55 (99-00)	42.09	39.07	18.36	0.48	100.00	0.18
All India	38 (1983)	52.62	34.07	12.73	0.58	100.00	1.04
	43 (87-88)	49.58	33.94	15.74	0.74	100.00	1.12
	50 (93-94)	48.23	32.08	18.82	0.87	100.00	0.98
	55 (99-00)	41.92	30.99	25.88	1.21	100.00	1.23

Source: NSSO, 38th, 43rd, 50th and 55th rounds CD ROMS

Appendix Table A.VI (U): Percentage Distribution of Urban 'Other' workers in Manufacturing by Education Level and by State (All Rounds)

| State | NSSO Round (year) | Different Educational Levels | | | | Total | Diploma holders as a percent of Total |
		Not Literate	Up to primary	. Up to Higher Secondary	Graduates & above		
A.P.	38 (1983)	40.11	35.47	22.14	2.27	100.00	2.07
	43 (87-88)	40.56	34.58	22.90	1.96	100.00	1.78
	50 (93-94)	36.33	35.75	24.50	3.43	100.00	2.93
	55 (99-00)	38.28	27.17	30.37	4.18	100.00	1.38
Assam	38 (1983)	19.74	40.08	39.69	0.49	100.00	0.90
	43 (87-88)	13.78	44.02	40.26	1.94	100.00	0.60
	50 (93-94)	10.21	37.79	48.73	3.27	100.00	9.84
	55 (99-00)	13.20	31.10	37.52	18.18	100.00	0.58
Bihar	38 (1983)	43.72	33.07	20.69	2.52	100.00	0.64
	43 (87-88)	39.81	31.38	28.05	0.76	100.00	0.00
	50 (93-94)	40.96	24.83	28.81	5.40	100.00	0.00
	55 (99-00)	37.95	22.16	27.66	12.23	100.00	1.12
Delhi	38 (1983)	32.04	27.16	31.11	9.70	100.00	2.83
	43 (87-88)	21.50	29.23	31.54	17.73	100.00	2.43
	50 (93-94)	16.67	22.47	42.99	17.87	100.00	4.37
	55 (99-00)	10.79	20.96	49.72	18.53	100.00	5.08
Goa	38 (1983)	14.56	72.84	9.95	2.65	100.00	9.76
	43 (87-88)	18.37	45.11	33.59	2.93	100.00	4.11
	50 (93-94)	42.69	22.73	31.19	3.39	100.00	16.07
	55 (99-00)	3.17	26.83	68.87	1.12	100.00	10.80
Gujarat	38 (1983)	25.69	39.84	30.81	3.67	100.00	3.10
	43 (87-88)	18.71	47.07	27.69	6.53	100.00	2.78
	50 (93-94)	14.63	38.15	38.25	8.97	100.00	5.17
	55 (99-00)	9.74	27.49	52.27	10.50	100.00	3.84
Haryana	38 (1983)	29.46	35.96	32.89	1.69	100.00	2.49
	43 (87-88)	20.54	39.37	35.27	4.82	100.00	3.62
	50 (93-94)	24.04	24.90	45.62	5.44	100.00	3.58
	55 (99-00)	15.48	17.37	52.32	14.83	100.00	6.28
H Pradesh	38 (1983)	28.77	27.21	44.02	0.00	100.00	10.52
	43 (87-88)	9.82	45.37	41.43	3.39	100.00	2.90
	50 (93-94)	11.85	10.98	69.71	7.46	100.00	2.93
	55 (99-00)	14.99	20.48	41.47	23.07	100.00	7.39
Karnataka	38 (1983)	36.48	36.14	25.45	1.93	100.00	1.38
	43 (87-88)	30.66	38.44	28.55	2.35	100.00	0.97
	50 (93-94)	33.76	25.19	37.80	3.26	100.00	1.75
	55 (99-00)	18.77	24.96	48.71	7.56	100.00	3.26
Kerala	38 (1983)	10.70	55.27	32.80	1.23	100.00	1.66
	43 (87-88)	6.70	46.88	44.53	1.89	100.00	2.11
	50 (93-94)	9.39	40.28	47.37	2.96	100.00	2.35
	55 (99-00)	3.22	39.79	54.11	2.88	100.00	5.22

44

Madhya Pradesh	38 (1983)	36.82	39.59	21.29	2.30	100.00	1.47
	43 (87-88)	33.12	39.05	23.79	4.04	100.00	1.10
	50 (93-94)	29.27	32.17	31.21	7.35	100.00	3.46
	55 (99-00)	28.34	29.41	32.49	9.76	100.00	2.74
Maharashtra	38 (1983)	21.53	37.62	36.41	4.43	100.00	4.03
	43 (87-88)	21.55	40.40	31.68	6.36	100.00	3.80
	50 (93-94)	19.67	26.54	45.19	8.61	100.00	6.17
	55 (99-00)	14.17	28.75	48.94	8.13	100.00	2.44
Orissa	38 (1983)	38.70	38.56	20.47	2.28	100.00	4.48
	43 (87-88)	28.18	42.46	27.62	1.73	100.00	2.22
	50 (93-94)	26.97	44.23	26.42	2.38	100.00	0.55
	55 (99-00)	34.87	30.85	29.49	4.78	100.00	1.83
Punjab	38 (1983)	26.48	35.81	32.76	4.95	100.00	3.03
	43 (87-88)	25.19	32.12	38.86	3.83	100.00	1.34
	50 (93-94)	16.59	26.21	49.13	8.07	100.00	2.01
	55 (99-00)	17.05	27.56	43.74	11.66	100.00	1.75
Rajasthan	38 (1983)	47.14	32.07	19.20	1.59	100.00	0.47
	43 (87-88)	38.08	34.31	21.28	6.33	100.00	0.72
	50 (93-94)	39.94	25.18	28.39	6.49	100.00	1.32
	55 (99-00)	29.55	25.04	36.14	9.28	100.00	1.74
Tamil Nadu	38 (1983)	29.02	46.52	22.67	1.79	100.00	2.57
	43 (87-88)	27.22	47.50	22.79	2.49	100.00	2.73
	50 (93-94)	23.71	44.27	28.79	3.22	100.00	2.37
	55 (99-00)	21.93	34.48	39.48	4.10	100.00	2.42
Uttar Pradesh	38 (1983)	46.90	28.76	21.93	2.40	100.00	1.17
	43 (87-88)	47.90	26.36	21.95	3.79	100.00	1.06
	50 (93-94)	37.51	29.22	26.32	6.94	100.00	1.78
	55 (99-00)	37.37	26.03	28.94	7.66	100.00	1.85
W.Bengal	38 (1983)	22.31	46.00	27.68	4.00	100.00	2.91
	43 (87-88)	23.22	52.12	19.96	4.70	100.00	1.07
	50 (93-94)	24.91	44.58	25.45	5.06	100.00	1.53
	55 (99-00)	22.74	31.90	36.96	8.41	100.00	1.38
All India	38 (1983)	32.29	38.30	26.36	3.04	100.00	2.34
	43 (87-88)	29.88	39.73	26.14	4.25	100.00	1.97
	50 (93-94)	26.64	33.72	33.51	6.12	100.00	2.99
	55 (99-00)	24.04	28.46	39.52	7.98	100.00	2.52

Source: NSSO, 38th, 43rd, 50th and 55th rounds CD ROMS

Appendix A.VIII (R): Correlation Matrix of State's Rural Characteristics

	Labour quality Index -R 55 round (1999-00)	HDI-R-1991 Rank	Poverty-R-1999-00 %	Literacy -R-1999-00	Exp. On Education-1998-99 (% to total budget)	Adult literacy-R-1991	PCSDP-1999-00 (current prices)	Proportion of workers in Manuf. -Rural-2001
Labour quality index - Rural	1.00							
HDI - Rural -1991	0.27	1.00						
Poverty - Rural -1999-00	0.21	0.71	1.00					
Literacy - Rural -1999-00	-0.18	-0.71	-0.55	1.00				
Exp. On Edu. -1998-99	0.42	0.28	0.40	-0.30	1.00			
Adult literacy -Rural – 1991	-0.21	-0.88	-0.42	0.72	-0.01	1.00		
PCSDP-1999-00	-0.66	-0.76	-0.72	0.59	-0.65	0.55	1.00	
Proportion of workers in Manuf.	-0.06	-0.44	-0.02	0.32	0.13	0.53	0.14	1.00

Appendix A.VIII (U): Correlation Matrix of State's Urban Characteristics

	Labour quality index-U 55 round (1999-00)	HDI-U-1991 Rank	Poverty-Urban-1999-00 %	Literacy -Urban-1999-00	Exp. On Edu. -1998-99 (% to total budget)	Adult literacy-Urban-1991	No. of ITI's -2000	PCSDP-1999-00 (Current prices)	Proportion of workers in Manuf. -urban-2001
Labour quality index-Urban	1.00								
HDI - Urban -1991	0.32	1.00							
Poverty-Urban -1999-00	0.46	0.75	1.00						
Literacy -Urban -1999-00	-0.32	-0.74	-0.41	1.00					
Exp. On Edu. - 1998-99	0.08	0.06	-0.06	0.07	1.00				
Adult literacy -Urban -1991	-0.30	-0.72	-0.42	0.95	0.18	1.00			
No. of ITI's –2000	0.41	0.16	0.34	0.12	-0.13	0.11	1.00		
PCSDP-1999-00	-0.17	-0.74	-0.58	0.36	-0.33	0.33	-0.09	1.00	
Proportion of workers in Manuf.	0.83	0.13	0.20	-0.11	0.01	-0.04	0.45	0.00	1.00