

Population Review

Volume 46, Number 1, 2007

Type: Article pp. 29-40

Impact of the Changing Labor Force on the Rate of Employment in Urban India

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Abstract

Population growth has transformed the structure of developing countries' labor markets from dual sector to tri-sector. The third sector is the informal labor market. This paper attempts to analyze how changes in demographic factors have affected the natural rate of employment among the informal labor force and how much of the change in the overall rate of employment is attributable to the change in the employment rate of formal and informal workers. The total informal employment effect has been decomposed into the pure demographic effect and the pure informal employment effect. Subsequently the overall employment rate is decomposed into the informal employment effect and the formal employment effect. The reference period for the study is 1981 to 2001. In the case of males, the employment effect outweighed the demographic effect. In the case of females, the demographic effect was stronger.

Keywords

Informal workers, decomposition, employment effect, demographic effect

Introduction

Demographic factors directly or indirectly affect the size, composition and distribution of the workforce. For instance, long term trends in fertility, mortality and migration affect the supply of the workforce. Cities in developing countries are facing a problem of threatening dimensions. Despite two decades of accelerated industrialization, the rapidly increasing workforce in cities is not being absorbed into full productive employment. Given the limited prospects of expanding agricultural employment, the critical issue is how the continued increases in workforce are productively absorbed in the urban economy (Friedmann 1973). One factor limiting the absorption of workers into the urban sector is the lack of understanding of the culture of this sector (for instance, requisite work habits and other skills). Population growth seems to be transforming the structure of developing country labor markets from dual sector to tri-sector in nature, creating a need for new measures of labor absorption beyond 'modern sector employment' (Bloom 1986). This third sector of the labor market which has come into existence in due course of time is the informal labor market .

The informal market is an important source of employment in the developing world. The emergence of this sector with a low capital investment per worker can be interpreted as a corrective response seeking to bring about a fuller utilization of human resources by counterbalancing the formal sector. Many countries seem to recognize the role of this sector in generating employment and income, most notably for the poor, but considerable skepticism seems to prevail among planners and policymakers as to the merits of promoting this sector (Sethuraman 1988). The emergence of this sector needs to be explained in relation to the changing socio-economic situation in developing countries, starting in the 1950s. Since the 50s, the effects of an increasing population growth compounded by a rapidly accelerating rural-urban migration led to employment problems of both a quantitative and qualitative nature.

The informal labor market can be seen as the unprotected segment of the labor market where free entry exists owing to high labor turnover. Ages of workers in this sector are significantly lower than the formal sector. The informal sector does not typically evolve to a point where it becomes fully integrated with the formal sector as development proceeds. The informal sector is, in effect, permanent by nature. But it does evolve: the dominant trend is towards proletarianisation because of the underlying exploitative relationship, which is reflected in the low selling prices of goods manufactured in this sector (Emmanuel 1983).

Based on different approaches used by different authors, the salient features of the informal sector are lack of clarity concerning its size and dynamics, self-employment and household employment as the primary modes of employment, no legal regulation of employment, wages almost non-existent, and operations on a small margin.

In the backdrop of these conditions, the starting point of questioning is to what degree and extent have demographic factors influenced the overall level of employment in the country? Of course other factors apart from demographic change have had an impact on informal sector employment, but the focus here is on the factors that have affected the natural rate of change of employment among the informal labor force.

Employment Scenario in India

In 1996, the employment figures in the informal sector in India were as depicted in Table 1. While mega cities have more than 60 % employment in the informal sector, in intermediate cities it ranges from 30% to less than 50% (Bhasin 2001). The unemployment rate as a percent of the workforce was 2 % at the end of the first five-year plan. This was derived from the Planning Commission's

Table 1 Employment in the informal sector in India and a few cities

City	% of total workers	City	% of total workers
India	90.4	Mumbai	68.1
Delhi	66.67	Chennai	60.60
Bangalore	32.21	Lucknow	48.0
Varanasi	48.96	Mysore	31.12
Hubli-Dharwad	30.73	Bhiwandi	77.94
Gulbarga	27.35	Tumkur	63.17

Source: *Second United Nations Conference on Human Settlements: HABITAT II, India-Draft Final National Report, Jan 1996.*

estimate of the backlog of unemployment in 1961, the additions to the workforce during 1951-61, and the estimate of the increase in employment opportunities during the same period. It was 3.4 % at the end of the second plan. It ranged between 4.1% to 5.3 % at the end of the fourth plan and further increased from 4.8% to 5.35% at the end of the fifth plan. The seventh plan envisaged generation of employment for more than 40 million person years. Some backlog of unemployment was expected to be cleared in the seventh five year plan period. The eighth five year plan stated that there was an estimated backlog of unemployment of nearly 23 million person years in April 1992. There would be an additional inflow of around 35 million in the workforce during the plan period. The employment growth would have to be about 4% per annum if the goal of providing employment to all by the end of eighth plan had to be achieved and around 3% if it had to be attained by 2007 A.D.

Table 2 gives the unemployment rate India in the three recent plan periods.

Table 2 Trends in population, workforce and employment

Year	1978	1983	1994	1992-97 (8 th Plan)	1997-2002 (9 th plan)	2002-2007 (10 th Plan)
Population	637.6	718.2	895.2	951.2	1028.9	1112.9
Workforce	255.8	286.6	368.5	374.2	423.4	478.8
Employment	249.1	281.2	361.5	367.2	416.4	474.7
Unemployment	6.7	6.7	5.4	7	7	4.1
Unemployment rate	2.63	1.89	1.89	1.87	1.66	0.86

Source: *Ninth Five Year Plan Perspective*

Open unemployment was of the order of 2.63% in 1978, it declined to 1.89 % in 1983 and further to 1.87% in 1997. This was due to the fact that growth rate of employment was slightly more than that of the workforce. The ninth five year plan expected the creation about 54 million additional job opportunities during the plan period and by the end of the plan the rate of unemployment had been expected to come down to 1.66 %.

Rationale: Studies on the informal sector in India are primarily individual city based studies. Moreover they are studies dealing with workers in particular occupations. In 1999-2001 the National Sample Survey Organization conducted its first ever nation wide survey on informal non-agricultural enterprises as a specific module of the Employment and the Unemployment Survey fifty-fifth round. Their study was based upon two approaches viz. household approach and enterprise approach. But it gave the overall level of employment in the non-agricultural informal sector. The current study is not just a study of the informal workers employed in the informal sector; it is about workers who form the informal workforce. Thus it includes workers engaged in household enterprises as well as workers who are casual wage laborers from the

organized sector. The study draws a profile of the informal workers using the means of livelihood approach whereby the worker is defined by the kind of work he does to earn his livelihood. It gives the description of the growth of the informal workforce and tries to show the components of growth of this workforce. Further, it tries to show if there exists any hierarchical system within the broad informal workforce category and attempts to determine what the scope is of providing employment security to these workers. It endeavors to arrive at the employment levels within and among the urban informal workforce (keeping in view differences in sex, sector, occupation and age). In this study an attempt is made to indicate how the informal workforce has evolved over the last two decades at the macro level. The study is not an individual city based study. Rather, it attempts to provide a comprehensive view of the urban informal workforce in India. The objective is to measure the extent of change brought on by demographic factors in the overall level of employment in the last two decades.

The paper attempts to answer several questions. How have changes in demographic factors affected the natural rate of employment among the informal labor force? How much of the change in the overall rate of employment is attributable to change in the formal rate of employment? How much of the change in the overall rate of employment is attributable to the informal rate of employment?

The demographic structure of the population is represented by the labor force composition. For each age-group the labor force composition has been defined as:

Labor force composition = Rate of formal employment + Rate of informal employment + Percent population who are not employed but are actively looking for work.

The change in the labor force composition denotes the demographic effect. The change in the rate of employment of informal workers denotes the informal employment effect.

In the first section of the paper the total informal employment effect has been decomposed into (i) the pure demographic effect and (ii) the pure informal employment effect. The second section breaks up the overall employment rate into the informal employment effect and the formal employment effect. In this section it is determined how much of the change in the overall rate of employment is due to a change in the formal rate of employment and how much of the change is due to a change in the informal rate of employment. The reference period for the study is 1981 to 2001.

Index method of computing the natural change in employment rate

The concept of index numbers has been used to determine how much of the change in the rate of informal employment has been due to an increase in the population and how much of the change is attributable to change in the employment scenario of the informal job market. The index method was used by Holcombe (1986) to assess the racial composition of unemployment in the USA from 1960 to 1980. A simple index method has been used to decompose the employment rate of the informal labor force. Now the change in the employment rate of the informal labor force can be attributed to two factors. One is the demographic change, or as it would be called the demographic effect, and the other is the pure employment rate effect. It is not only the composition of the informal labor force that changes over time but also the net number of people who are entering this informal labor force in different age groups.

Data sources: The data on the labor force has been used from the Economic Tables of Census of India 1981, 1991 and 2001. The data on informal workers have been estimated from the data on employment and unemployment from various rounds of the National Sample Survey on Employment and Unemployment viz. 38th round (1983-84), 50th round (1993-94), 55th Round (1999-2000) and the 56th Round (2000-2001)

The informal work participation rates from the National Sample Survey rounds have been applied to the census data to arrive at the total informal workers in urban India. The data considered is only on the urban areas of all the major states where the survey was carried out.

Change in the natural rate of employment among the informal workers

The employment rate among the informal labor force has been calculated for each working age group. Now, keeping the labor force structure constant from 1981 to 1991, the change in the employment rate of the informal labor force between these two points of time can be captured. This is the pure employment effect.

Similarly, keeping the employment rate constant, the pure demographic effect can be captured. The product of these two effects viz. pure employment effect and pure demographic effect give the actual change in employment rate.

The assumption here is of a multiplicative model whereby the change in the actual rate of informal employment is the product of the demographic effect on rate of employment and the pure employment effect on rate of employment. This has been denoted as:

$$\sum (L_1E_1 / L_0E_0) = \sum (L_1E_1 / L_0E_1) * \sum (L_0E_1 / L_0E_0)$$

(L_1E_1 / L_0E_0) is the ratio of informal labor force in the current year to the informal labor force in the base year.

(L_1E_1 / L_0E_1) is the ratio of the informal labor force in the current year to the informal labor force in the base year subject to the condition that the percent of workers employed as informal workers has remained constant for both the base year and the current year.

This is the demographic effect.

(L_0E_1 / L_0E_0) is the ratio of the informal labor force in the current year with the demographic features of the base year to the informal labor force of the base year.

Base year is denoted by 0 and current year is denoted by 1.

Table 3: Percentage distribution of the labor force and the rate of employment among informal workers in urban India from 1981 to 2001

Age-Group	Labor force composition			Informal employment		
	1981	1991	2001	1981	1991	2001
5-9	0.1	0.1	0	0.1	0.1	0
10-14	2.4	1.3	1	1.6	0.9	0.6
15-19	9.3	7.5	6.9	5.6	4.7	4.1
20-24	15.2	13.2	12.9	8	7.5	7.2
25-29	15.3	14.8	14.7	7.6	8	8.3
30-34	12.9	13.8	13.4	6.1	7.3	7.7
35-39	11.4	13	13.3	5.4	6.6	7.5
40-44	9.8	11.1	11.6	4.5	5.5	6.1
45-49	8.3	9.3	9.9	4	4.5	4.9
50-54	6.3	6.7	7	3.3	3.2	3.3
55-59	3.9	4.6	4.6	2.3	2.5	2.2
60-64	2.6	2.3	2.2	2	2	1.8
65-69	2.3	2.3	2.4	1.9	2	2.2
Total	100	100	100	54.5	55.8	56.4

Table 3 indicates that there has been a fall in the percentage of labor force in all the age-groups up to 20-24. Similarly the percentage employed has also fallen up to the age of 24 from 1981 to 2001. The concentration of labor force is in the age-group 25-29. But the percentage employed as informal workers is maximum in the age-group 20-24. But over the years the concentration of

informal employment declined in this age-group and the shift in informal employment has been towards the age-group 25-29 where the concentration of labor force is also maximum. Over the years the concentration of labor force has shifted towards the older age-groups. There has been a decline in the percentage composition of labor force over the census years up to the age of 24. From the age of 30 onwards there is a rise in the percentage of labor force over the subsequent census years. In case of males from the age-group 30-34 onwards there is a rise in the percentage of labor force in all the age-groups over the years. From the age group of 25-29 onwards there are more numbers of people getting employed as informal workers in the older age-groups. The age-wise distribution of labor force and informal employment rate is given separately for males and females in table 4 and table 5

Table 4: Percentage distribution of the male labor force and the rate of employment of informal male workers in urban India from 1981 to 2001

Age-Group	Male labor force composition			Informal employment rate among males		
	1981	1991	2001	1981	1991	2001
5-9	0.2	0.1	0.1	0.2	0.1	0
10-14	2.9	1.6	1.2	2	1.1	0.8
15-19	9.6	7.7	7	6	4.9	4.2
20-24	14.9	13.3	12.8	7.9	7.4	6.9
25-29	15	14.5	14.6	7.5	7.8	8.1
30-34	12.7	13.7	13.5	6.2	7.4	7.7
35-39	11.4	13.1	13.6	5.7	6.9	7.7
40-44	9.8	11	11.5	4.9	5.7	6.3
45-49	8.3	9.3	9.8	4.3	4.8	5.1
50-54	6.3	6.7	6.5	3.5	3.4	3.4
55-59	3.9	4.4	4.5	2.4	2.5	2.3
60-64	2.6	2.3	2.2	2	1.9	1.8
65-69	2.3	2.2	2.4	1.9	1.9	2.1
Total	100	100	100	52.4	54.8	55.9

Table 5: Percentage distribution of female labor force and the employment rate of informal female workers in urban India from 1981 to 2001.

Age-Group	Female labor force composition			Informal employment rate among females		
	1981	1991	2001	1981	1991	2001
5-9	0.7	0.3	0.1	0.5	0.2	0.1
10-14	5.1	2.8	2.2	3.7	2	1.6
15-19	11	8.3	7.6	7.5	5.6	4.8
20-24	13.7	13.5	12.4	7	6.7	5.5
25-29	13.4	13.6	13.8	7	7.1	7.1
30-34	11.8	13.5	14	6.7	7.9	7.9
35-39	11.1	13.7	14.6	6.9	8.5	8.8
40-44	9.9	10.8	11.2	6.6	6.8	6.9
45-49	8.	9.3	9.4	5.4	5.9	5.5
50-54	6.2	6.5	6.4	4.3	4	3.8
55-59	3.7	3.8	4	2.7	2.6	2.8
60-64	2.8	2.3	2.2	2.1	1.9	1.9
65-69	2.3	1.9	2	1.8	1.6	1.7
Total	100	100	100	62.2	60.8	58.4

In the case of females, the labor force participation rate and employment rate declines up to the age-group of 20-24 after which there appears to be a rise in the percent of labor force participation rate and employment rate in all subsequent age-groups over the years.

Decomposition of the employment rate

Table 6 decomposes the employment rate into the demographic effect and the pure employment effect for males and females.

Table 6: Break-up of employment effect and demographic effect by sex

Change in employment levels	Total	Male	Female
1981-1991	1.054	1.063	1.049
1981-2001	1.0843	1.105	1.021
Employment effect			
1981-1991	1.043	1.058	1.004
1981-2001	1.0613	1.09	0.96
Demographic effect			
1981-1991	1.01	1.0047	1.045
1981-2001	1.022	1.013	1.064
Total effect			
1981-1991	$1.054 = 1.043 * 1.01$	1981-2001	$1.084 = 1.061 * 1.022$
	$1.063 = 1.058 * 1.0047$		$1.1048 = 1.09 * 1.0134$
	$1.049 = 1.004 * 1.045$		$1.021 = 0.96 * 1.064$

It can be seen that informal sector employment rate increased by 5.4% in a span of 10 years from 1981 to 1991 and by 8.4 percent over 2 decades from 1981 to 2001. Out of this increase in employment rate 1.01 % of the increase is attributed to a pure demographic effect for the 10 year period 1981 to 1991. For the period of 20 years 2.2% of the increase in employment rate could be attributable solely to the demographic effect

The demographic impact when calculated separately for males and females indicates that in the case of males the change in employment for the period 1981 to 1991 was 6.3%. During this period the employment effect was stronger than the demographic effect. The contribution of the pure employment effect was 5.4% as compared to the demographic contribution of 0.4%. Similarly for the period covering two decades employment rate increased by 10.5% with the employment factor contributing 9% and the demographic factor contributing 1.3%. But in case of females, the demographic component was much stronger than the pure employment component. In fact the employment effect appeared to be negative over the 20 year period. There was a decline in the employment effect by 4% from 1981 to 2001.

Change in the level of employment among the formal and informal workers

The overall employment level has been further decomposed into two components of employment rate of the formal workers and the employment rate of the informal workers. The objective here is to see which category of workers has increased more and how much of this rise is due to sectoral shifts of the workers.

The two effects that can account for the rate of change in employment level are formal employment effect and informal employment effect. Formal employment effect is the increase in employment in the formal labor market due to the creation of more jobs. The informal effect is the increase in the employment levels in the informal labor market due to the shift in employment from the formal to the informal job market.

Table 7: Distribution of male workers according to category of employment

Age-Group	Formal employment			Informal employment		
	1981	1991	2001	1981	1991	2001
5-9	0	0	0	0.2	0.1	0
10-14	0.6	0.4	0.3	2	0.9	0.8
15-19	2.1	1.8	1.7	6	4.7	4.2
20-24	4.9	3.7	3.8	7.9	7.5	6.9
25-29	6.7	5.5	5.1	7.5	8	8.1
30-34	6.5	5.9	5.3	6.2	7.3	7.7
35-39	5.8	6	5.6	5.7	6.6	7.7
40-44	5.1	5.2	5.3	4.9	5.5	6.3
45-49	4.2	4.4	4.8	4.3	4.5	5.1
50-54	2.9	3.2	3.6	3.5	3.2	3.4
55-59	1.5	1.8	2.4	2.4	2.5	2.3
60-64	0.5	0.4	0.4	2	2	1.8
65-69	0.4	0.3	0.3	1.9	2	2.1
Total	41.2	38.6	38.6	52.4	54.8	55.9

In the case of informal workers there appears to be a continuous rise in the percentage of employment in all the prime working age-groups over the years. But in the case of formal workers up to the age of 40 there was a decline in the percentage of employment in all the age-groups over the years, and then in the older age-groups there was an increase in the level of employment from 1981 to 2001.

Table 8: Distribution of female workers according to category of employment

Age-Group	Formal employment			Informal employment		
	1981	1991	2001	1981	1991	2001
5-9	0.1	0.1	0	0.5	0.2	0.1
10-14	1.3	0.6	0.5	3.7	2	1.6
15-19	2	1.5	1.5	7.5	5.6	4.8
20-24	4.1	3.5	3.7	7	6.7	5.5
25-29	5.1	4.7	4.7	7	7.1	7.1
30-34	4.7	4.8	5.3	6.7	7.9	7.9
35-39	4.1	4.9	5.4	6.9	8.5	8.8
40-44	3.2	3.9	4.2	6.6	6.8	6.9
45-49	2.8	3.2	3.8	5.4	5.9	5.5
50-54	1.8	2.4	2.6	4.3	4	3.8
55-59	0.9	1.1	1.2	2.7	2.6	2.8
60-64	0.7	0.4	0.3	2.1	1.9	1.9
65-69	0.5	0.3	0.3	1.8	1.6	1.7
Total	31.3	31.4	33.5	62.2	60.8	58.4

For female workers the percentage employed as informal workers was higher than that employed as formal workers. The rise in the percentage of employment for both formal and informal workers was uniform over the years from the age of 30 onwards for all the age-groups up to the age of 59.

Table 9: Break-up of employment rate by the formal and informal employment effect by sex

	Male	Female
Change in employment 1981-2001	1.0249	1.1167
Informal Employment effect 1981-2001	1.1376	0.999
Formal Employment effect 1981-2001	0.901	1.1175
Total effect 1981-2001	$1.0249 = 1.1376 * 0.901$	$1.1167 = 0.999 * 1.1175$

The overall employment level has increased by 2.4 % in the case of males and by 11.6 % in the case of females in a span of two decades. Now the shift from the formal to the informal labor market is 13% among male workers. The growth of the formal labor market has in fact been negative, 10% in the case of males. In the case of females, the informal market has shown a negative growth of 1% whereas the formal labor market has shown a growth of 11.75 % over a span of two decades. This implies that the participation of females as workers is still increasing. So the demographic effect is stronger

Summary of findings

The first section of this paper decomposes the natural rate of informal employment into the pure demographic effect and a pure employment effect. The second section decomposes the overall employment rate into the informal and formal employment rate.

In case of males from the age-group 30-34 onwards, there is a rise in the percentage of labor force in all the age-groups over the years. From the age group of 25-29 onwards, there are more numbers of people getting employed as informal workers in the older age-groups. In the case of females, the declining trend over the years of labor participation and informal work participation exists up to the age-group of 20-24 after which there appears to be a rise in the percent of labor force and employment in all subsequent age-groups over the years.

The overall informal sector employment rate increased by 5.4% in a span of 10 years from 1981 to 1991 and by 8.4% in a span of 20 years from 1981 to 2001. When this employment rate is decomposed, it can be seen that 1.01 % of this increase is attributed to a pure demographic effect for the 10 year period and for the period of 20 years 2.2% of the increase in employment rate can be attributed to the demographic effect.

In case of males, the change in employment for the period 1981 to 1991 was 6.3%. During this period the employment effect was stronger than the demographic effect. The contribution of the pure employment effect was 5.4% as compared to the demographic contribution of 0.4%. For the period covering two decades, the employment rate increased by 10.5% with the employment factor contributing 9% and the demographic factor contributing 1.3%.

But in the case of females the demographic component was much stronger than the pure employment component. In fact the employment effect appeared to be negative over the 20 year period. There was a decline in the employment effect by 4% from 1981 to 2001. Further when the overall rate of employment was decomposed it was found that the overall employment level increased by 2.4 % in the case of males and by 11.6 % in the case of female in a span of two decades. Now the shift from the formal to the informal labor market is 13% among male workers. The growth of the formal labor market has been negative, 10% in the case of males. In the case of females, the informal market has shown a negative growth of 1% whereas the formal labor market has shown a growth of 11.75 % over a span of two decades.

Thus it can be inferred that in the case of males the employment effect outweighed the demographic effect. This means that it wasn't so much the natural increase in population that contributed to the increase in male informal workers but the shift from the formal sector to the informal sector or the inability to find jobs in the formal sector. For females, the demographic effect was stronger than the employment effect. This implies that the effect was only the result of a pure increase in entry into the labor market for females

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