

Industry and Informal Sector in the Context of Globalisation

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Abstract

This paper focuses on the possible beneficial effects of economic reforms on labour. This is pursued by examining the wage-productivity nexus in the organized manufacturing in India and the relationship between the informal sector and industry. The wage-productivity relationship is analysed at the two digit groups of the manufacturing sector based on panel data and the informal sector-industry relationship is assessed from the cross-sectional data. The results do not tend to suggest any deterioration on the welfare front though positive effects are neither evident.

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1. Introduction

In the context of globalisation firms have been in dire need to reduce cost with a view to enhancing their ability to compete. Though labour market reforms were not carried out explicitly industries were allowed to do so in practice, which possibly raised the employment growth with a steady decline in wage growth during the nineties (Goldar, 2004). However, given the fact that labour productivity growth continued to be fast in the reform period this means a larger share for the entrepreneur vis-à-vis labour. Though one of the objectives of the reform process has been to reduce labour market regulations and facilitate the smooth functioning of the corporate world it is equally important to examine if reforms led to any possibility of aggravation in economic inequality. This paper based on panel data makes an attempt to examine the wage-productivity nexus across different groups of industries in the organized manufacturing in India.

It may be argued that even when labour absorption in the organized industry is insignificant relative to the supplies of labour and even when labour productivity growth is rapid accruing a smaller share to the labour, industry can generate employment opportunities elsewhere in the economy. By reinvesting the surpluses and

creating avenues for ancillarisation it can generate employment in the informal sector.

Keeping this in view the second objective of this paper is, therefore, to examine the nature of relationship between industry and the informal sector. This is pursued mainly to assess the indirect effects of the industry on employment in the rest of the economy.

This particular aspect we capture on the basis of cross-sectional data, in the absence of time series data.

2.Wage-Productivity Relationship in Organised Manufacturing

The wage per worker function is as follows:

$$\text{LnWAG} = G(\text{LnGVEM}, \text{DLnGVEM}, \text{LnCAPEM})$$

$$\text{LWAG} = F(\text{LGVEM}, \text{DLGVEM}, \text{LCAPEM}, \text{LMANW})$$

Where, L is the log transformation, WAG is the wage per worker, GVEM is gross value added per employee, and CAPEM is capital per employee. Wage per worker is taken as a function of productivity and capital-employee ratio. To allow for the change in the effect of productivity on wage in the nineties relative to eighties the slope dummy DLGVEM has been introduced. Higher levels of productivity are likely to raise the wages, as part of the productivity gains may be transferred to the workers. The sources of productivity rise are rise in capital intensity, technological change or improved organization efficiency (see Tendulkar, 2000). If higher levels of capital-labour ratio are indicative of a mere rise in capital intensity and not technological improvement, this may reduce labour demand and thus wages. However, if higher levels of capital-labour ratio are indicative of higher levels of technology, suggesting improved performance of

labour, wages may then actually increase. In an alternative specification man-days per worker (LMANW) has also been introduced hypothesizing that with a rise in the man days per worker wage per worker would go up. If labour is used on part time or piece rate basis higher levels of man days per worker would mean more work opportunities and hence, earnings are expected to increase. In the context of labour market reforms with larger possibilities of recruiting workers on part time and piece rate basis, this variable is expected to be of great importance. Even for the full-time workers the provision for over-time remuneration would cause a positive effect of man days per worker on wages per worker. Only when for the full time workers there exists no scope for over-time payment, rise in man days per worker cannot make any impact on wage per worker. If full-time workers are under-utilized, strict work conditions in terms of more intensive utilization of work force may also raise the man days per worker, but this will not enhance earnings. On the other hand, when full-time workers are utilized to the full extent, rise in man days per worker can result in rise in overtime employment and thus overtime payment.

As shown in Table 1, productivity is a significant determinant of wages per worker across a large number of two digit industry groups. However, the partial elasticity of wage with respect to productivity at the aggregate ASI level turns out to be 0.27 and 0.19 depending upon whether man days per worker is or is not included in the function, suggesting that only a small fraction of productivity gains are transferred to workers in terms of wage benefits. Except wool (24), jute (25), textile (26) and basic metal (33) in the rest of the industry groups the effect of productivity on wage rose in the reform period compared to the pre-reform period, as the coefficient of the slope dummy turns out to be significant. However, the magnitude of rise is only nominal. At the aggregate

level, for example, it increased by 0.008 point. The fact that the elasticity of wage with respect to productivity did not decline either at the aggregate level or in the case of a large majority of the industry groups, tends to suggest the absence of deterioration in the share of labour in the growth process.

Capital-employee ratio reveals a mixed picture: it raised wages in a number of industries while it affected wages adversely or remained insignificant in some other, consequently showing an insignificant effect on wages at the aggregate level. Corresponding to the following industry groups food (20-21), beverages (22), wool and silk (24), wood (27), paper (28), rubber (31), non-metallic minerals (32), metal (34), machinery (35-36), transport equipment (37) the capital-employee ratio reveals a positive effect on wages. Only in cotton textile (23) the effect is seen to be negative and in textile products (26) and basic metal (33) it is positive when man days per worker is included; otherwise it turns out to be negative with the exclusion of this variable. In the rest of the industry groups the effect is statistically insignificant. On the whole, in a large number of industry groups capital-labour ratio tends to raise wages indicating improved performance of labour with higher levels of capital per head. However, in most of the cases the elasticity of wage with respect to capital-labour ratio turns out to be extremely low except wool and silk etc. (24) and machinery (35-36) where it ranges from 0.11 to 0.13; (also in the case of 20-21 it is 0.21 when mandays per worker is dropped).

Finally, man days per worker turns out to be an important determinant of wages per worker in most of the industry groups - except non-metallic minerals (32) and metal products (34) - , and interestingly the elasticity of wage with respect to man days appears to be around unity except paper (28), leather (29), machinery (35-36) and other

manufacturing (38). This confirms that man days per worker being a significant determinant of earnings, the decline in the rate of growth of wages in the nineties relative to the eighties could be an outcome of the decline in the rate of growth of man days per worker, which virtually had been stagnant in the nineties.

Table 1: Determinants of Wages per Worker

Ind. Code	Constant	LGVEM	DLGVEM	LCAPEM	LMANW	Adj. R2	Model	N
20-21	1.42 (8.10)*	0.11 (5.04)*	0.01 (6.97)*	0.04 (1.65)**	1.01 (20.18)*	0.77	RE	252
	3.24 (12.49)*	0.33 (10.33)*	0.002 (0.65)	0.21 (5.95)*		0.68	RE	266
22	0.82 (1.30)	0.18 (7.48)*	0.005 (2.03)*	0.08 (4.31)*	0.90 (7.70)*	0.74	RE	251
	5.35 (22.41)*	0.22 (8.28)*	0.005 (1.92)**	0.11 (5.46)*		0.63	RE	265
23	4.72 (8.11)*	0.05 (2.30)*	0.004 (2.46)*	-0.02 (-1.26)	0.69 (6.65)*	0.17	RE	252
	8.46 (37.09)*	0.09 (3.81)*	0.005 (2.93)*	-0.04 (-2.19)*		0.51	RE	266
24		0.05 (1.85)**	0.003 (-0.75)	0.11 (3.98)*	0.98 (4.10)*	0.77	FE	239
		0.08 (2.80)*	-0.004 (-1.18)	0.12 (4.49)*		0.77	FE	253
25	0.77 (1.30)	0.14 (4.14)*	0.004 (1.30)	0.20 (0.95)	1.14 (12.45)*	0.43	RE	192
	-29.90 (-0.34)	1.42 (0.15)	0.76 (0.67)	1.93 (0.34)		-0.01	OLS	206
26		0.18 (5.92)*	0.004 (1.16)	0.06 (2.09)*	0.82 (3.09)*	0.83	FE	249
	37.08 (0.64)	14.72 (2.10)*	1.38 (1.60)	-18.91 (-3.05)*		0.03	RE	265
27	-0.83 (-0.57)	0.13 (5.34)*	0.01 (5.12)*	0.04 (2.56)*	1.35 (5.06)*	0.48	RE	252
	6.58 (30.98)*	0.15 (6.00)*	0.01 (5.50)*	0.05 (2.87)*		0.33	RE	266
28	4.15 (4.43)*	0.18 (7.42)*	0.02 (8.05)*	0.02 (1.32)	0.51 (2.95)*	0.41	RE	252
	6.28 (24.40)*	0.25 (11.40)*	0.01 (7.03)*	0.04 (2.15)*		0.43	RE	266
29	4.00 (4.17)*	0.13 (6.36)*	0.02 (3.86)*	-0.02 (-1.12)	0.66 (4.0)*	0.27	RE	245
	0.75	0.12	0.009	-0.18		0.27	RE	258

	(26.89)*	(5.98)*	(3.52)*	(-0.81)				
30	2.13 (3.30)*	0.09 (3.81)*	0.01 (5.77)*	-0.03 (-1.60)	1.15 (10.11)*	0.36	RE	249
	7.99 (23.30)*	0.14 (5.49)*	0.01 (5.79)*	-0.02 (-0.84)		0.17	RE	262
31	1.99 (5.79)*	0.11 (5.54)*	0.01 (5.40)*	0.04 (2.36)*	0.94 (17.84)*	0.53	RE	249
	6.88 (23.21)*	0.19 (6.25)*	0.02 (5.42)*	0.008 (0.31)		0.34	RE	262
32		0.14 (6.48)*	0.006 (3.62)*	0.07 (4.65)*	0.04 (1.17)	0.86	FE	252
		0.14 (7.05)*	0.006 (3.51)*	0.07 (5.12)*		0.86	FE	265
33	1.08 (1.10)	0.09 (2.99)*	-0.004 (-1.61)	0.09 (3.28)*	1.09 (6.17)*	0.47	RE	252
		0.19 (7.29)*	0.0002 (0.17)	-0.16 (-2.74)*		0.95	FE	266
34	5.61 (8.06)*	0.21 (5.14)*	0.009 (3.72)*	0.10 (3.68)*	0.04 (0.37)	0.42	RE	252
	6.10 (16.94)*	0.18 (4.70)*	0.01 (4.24)*	0.1 (3.62)*		0.42	RE	266
35-36	4.50 (5.13)*	0.18 (5.33)*	0.005 (2.75)*	0.12 (3.99)*	0.28 (1.95)**	0.45	RE	228
		0.17 (5.43)*	0.004 (2.50)*	0.13 (5.04)*		0.86	FE	266
37	3.02 (3.14)*	0.58 (2.93)*	0.009 (4.97)*	0.05 (3.08)*	0.92 (5.35)*	0.40	RE	228
	8.01 (36.30)*	0.09 (4.24)*	0.01 (4.74)*	0.04 (2.53)*		0.36	RE	265
38		0.19 (7.65)*	0.006 (2.25)*	-0.03 (-1.46)	0.45 (3.09)*	0.81	FE	251
		0.19 (7.54)*	0.008 (2.76)*	-0.03 (-1.18)		0.79	FE	265
Agg.	0.08 (0.11)	0.27 (8.16)*	-0.0006 (-0.36)	-0.03 (-1.10)	1.15 (7.57)*	0.62	RE	252
		0.19 (7.54)*	0.008 (2.76)*	-0.03 (-1.18)		0.79	FE	265

Note: Based on ASI data.

3. Informal Sector

The term 'informal sector' has been used extensively, particularly in the empirical literature, in spite of the difficulties involved in defining the term¹. The informal sector in India is seen to absorb the surplus labour residually in low productivity activities resulting from the sluggish growth of employment in high productivity activities. As poor cannot afford to remain unemployed for long, the phenomenon of 'working poor' is prevalent. Meager earnings reduce their accessibility to decent living conditions. In other words, there are considerable overlaps among informal sector employment, poverty and slum dwelling (Mitra, 1994).

Some of the defining characteristics of the informal sector used in the literature are in terms of the smallness of the size of the operating unit, poor level of technology, perfect competition prevailing in the factor and product markets both, the lack of protection by the government to the units/workers, and the lack of unionization of the work force (See Papola, 1981 and Mitra, 1990)². The working definition, however, cannot be based on all the criteria- usually the size and the ownership criteria have been used in estimating the share of informal sector in total employment (see Mitra, 1994 and 2001). And most

¹ See Peattie (1987) for details.

² ILO (1970, 1972) laid down the following characteristics of the informal sector: (a) condition of free entry into the product market, dependence on traditional resources, family ownership of enterprises, small-scale of operation, low level of technology characterized by low capital-labour ratio, skills acquired outside the formal school system, unregulated and competitive factor markets.

of the earlier studies noted that at least 50 per cent of the city work force was engaged in the urban informal sector (Papola, 1981, Mitra, 1990, 1994). Also, in terms of composition a large majority of the informal sector workers were employed in low productivity tertiary activities. Below we examine the size of the informal sector based on different sources of data, for the more recent years.

It may be further noted that informal sector employment is only a subset of informal employment (see Papola, 1981, Mitra, 1994 and Sastry, 2004). The latter includes informal sector employment as well as those engaged informally in the formal or organized sector. In the recent years both in the organized industry and organized tertiary sector, employment through private contractors has taken place. Though the wage rate of such contract labour in the organized or the formal sector may be higher than the wage rate prevailing in the informal sector, labour laws and several benefits that apply to regular wage or salaried workers in the organized or formal sector are not applicable to the contract workers. Hence, in terms of uncertainties relating to loss of pay and jobs, particularly during the time of exigencies, the contract labour in the organized/formal sector is no less vulnerable in comparison to their counterparts in the informal sector. The estimate of informal employment at the city level turned out to be around 60 per cent several years ago, (Mitra, 1994), and this is expected to have gone

up further in the recent years. Use of contract labour through other labour agencies (labour intermediaries), sub-contracting and outsourcing of activities by the main firm on piece rate basis and casualisation of work force are seen as a part of globalisation process. Firms in an attempt to avoid strict labour laws and reduce labour cost have taken recourse to these means in the absence of labour market deregulation, and state governments in the fear of losing revenue have extended indirect support to these practices (Tendulkar, 2004 and Uchikawa, 2003). Though employment growth in the organized industry in India has gone up in the reform period, a large part of labour earnings is expropriated by the so called labour intermediaries. Amendments of labour laws could have at least reduced such adverse outcomes (Mitra and Bhanumurthy, 2006).

The overlaps between informal sector employment and poverty are significant (Mitra, 1994, 2001). Based on the recent NSS data (1999-00) Sastry (2004) shows that the incidence of poverty as well as intensity of poverty among households sustaining on employment in informal sector were higher in urban areas compared to the rural areas. Also the incidence and intensity of poverty among those sustaining on informal sector employment were higher than their counterparts among the general population in the urban areas of the country.

Estimating Informal Sector Employment

Three different estimates are provided below as regards the size of the informal sector.

The NSS 55th round collected information on the informal sector non-agricultural enterprises for the first time as a part of the employment-unemployment survey.

Information on workers including those working in the proprietary and partnership non-agricultural enterprises was also collected for each member of the household during the employment-unemployment survey. In this survey all unincorporated proprietary and partnership enterprises were defined as informal sector enterprises³ (NSSO, 2001).

The estimated number of workers in the informal non-agricultural enterprises are given based on the enterprise survey (Schedule 2.0) and the household survey (Schedule 10) in both rural and urban areas. Interestingly, both the schedules differ substantially from each other in terms of the number of workers. By and large the household schedule enumerated a larger number of workers than the enterprises schedule.

On an average at the all India level, as seen from Table 2, around 55 and 47 per cent of the workers are found in the informal sector in the rural and urban areas respectively (obtained from the enterprise survey). On the basis of the household survey the

³ This is different from the definition of unorganized sector used in the National Account Statistics, which considers enterprises run by cooperative societies, trusts, private and public limited companies (not covered by ASI), in addition to the units covered by the NSSO's definition of informal sector as mentioned above.

estimates are 65 and 55 per cent for rural and urban areas respectively. Both the estimates, however, are indicative of a very large percentage of workers being engaged in the informal sector. Both in the rural and urban areas workers from own account enterprises comprise a very significant percentage of the total informal sector workers. Though own account enterprises comprise the bulk (85 per cent) of the informal sector workers in the rural areas, urban areas show an almost equal distribution of workers across own account enterprises and establishments (Table 1). The incidence of informal sector defined as the proportion of informal sector workers to total workers is highest in trade etc. followed by manufacturing, transport and real estate, business services etc. Though community, social and personal services are also expected to show a high incidence of informal sector employment, the exclusion of domestic services from the informal sector survey reduces the share (Table 2). In terms of composition it may be noted from Table 2 that manufacturing and trade account for 70 to 75 per cent of the total informal sector employment. In the urban areas the share of trade etc. (41 per cent) exceeds that of manufacturing (30 per cent). Hence, the dominance of the tertiary activities in the informal sector, which was observed three decades back (see Udall, 1976 and Mitra, 1990), does not seem to have undergone any major change.

Across states as observed from Table 3, the urban areas of Andhra Pradesh, Gujarat, Haryana, Punjab and Uttar Pradesh reported a somewhat higher estimate of informal sector employment in relative terms compared to the national average (from the enterprise approach). Even as per the household approach Andhra Pradesh, Haryana, Orissa, Punjab and Uttar Pradesh registered a higher figure than the urban India. By and large the highly industrialised states tend to show a relatively lower share of informal sector employment in the urban areas. As far as the rural areas are concerned states like Karnataka, Orissa, Uttar Pradesh and West Bengal reported a very large share of informal sector employment, lying much above the national average, as per the enterprise approach. However, based on the household approach Tamil Nadu, Uttar Pradesh and West Bengal turn out to be the outliers. On the whole, states with both high and low levels of industrialization and/or per capita income reveal a very large share (more than half) of informal sector in total employment across both rural and urban areas, which tends to support Papola's (1981) view, though the processes and causes of growth of the informal sector in both the situations are quite different⁴.

Another estimate is obtained by following the residual approach, i.e. the number of organized sector workers for the year 2000, as estimated by DGE&T of the Ministry of

⁴ This point is discussed later in the text.

Labour, has been deducted from the total number of workers for 1999-00 (Table 4). As per this estimate unorganized sector comprises around 90 per cent of the workers in the non-agriculture sector in all areas (rural and urban combined). But the organized sector employment, as it has been documented quite extensively, is a gross underestimate.

Table 2: Relative Size and Composition of Informal Sector: All India (1999-2000)

Category (Industry)	OAE Workers in Informal Sector (%) (Rural)	Informal Ent. Workers as a % of Total Workers (Rural)	% Dist of Informal Ent. Workers across Categories (Rural)	OAE Workers in Informal Sector (%) (Urban)	Informal Ent. Workers as a % of Total Workers (Urban)	% Dist of Informal Ent. Workers across Categories (Urban)
Manufacturing	84.06	78.56	44.4	46.53	56.35	29.9
Constructon	78.29	15.14	3.8	60.00	15.36	2.9
Trading and Repair Services	92.66	87.96*	30.1	63.13	75.63*	41.1
Hotels and Restaurants	77.11		4.2	41.83		6.6
Transport, Storage and Communications	80.24	39.59	6.4	71.11	33.16	6.8
Financial Intermediation	57.14		0.2	44.44		0.7
Real Estate, Renting and Business Activities	74.19	34.72**	0.8	46.28	38.57**	3.0
Education	35.59		1.5	26.09		2.9
Health and social work	83.33		1.4	35.82		1.7
Other community, Social and Personal Services (excluding domestic services)	93.81	27.09***	7.3	68.68	19.95***	4.6
ALL	85.76	55.20	100.0	55.32	46.83	100.00

Note: 1. OAE stands for own account enterprises. Ent. is the short form for enterprises.

2. *Trading etc. includes Hotels etc., ** Real Estate etc. includes Finance and ***Community Services include Education and Health. Though informal sector corresponding to Community etc. does not include

domestic services, total workers in this category include them, resulting in underestimation of the relative size of informal sector in this category.

3. The percentage of informal sector workers has been calculated by applying the NSS work participation (UPSS) rate to the 2001 census-adjusted population figures for 1999-00. For various industry divisions or categories the absolute figures are obtained by applying the NSS figures of per thousand distribution of workers.

Source: Absolute number of informal sector workers are taken from *Informal Sector in India, 1999-2000, Salient Features*, NSS 55th round, Report No. 459(55/2.0/2).

Table 3: Employment Size of Informal Sector across States (1999-2000)

State	Rural			Urban		
	Inf. Ent. Workers as a % of Total Workers	Inf. HH Workers as a % of Total Workers	Inf. Ent. Workers as a % of Inf. HH Workers	Inf. Ent. Workers as a % of Total Workers	Inf. HH Workers as a % of Total Workers	Inf. Ent. Workers as a % of Inf. HH Workers
Andhra Pradesh	59.81	68.15	87.76	53.96	71.36	75.62
Assam	34.64	51.19	67.66	35.20	40.32	87.28
Bihar	57.21	53.12	107.71	44.37	48.30	91.87
Gujarat	40.14	61.40	65.38	53.03	52.25	101.50
Haryana	30.85	54.47	56.64	48.59	56.82	85.52
Karnatka	69.60	68.56	101.51	45.15	48.84	92.45
Kerala	37.96	64.42	58.93	41.88	54.03	77.51
Madhya Pradesh	58.37	59.46	98.18	39.37	53.91	73.04
Maharashtra	51.71	56.05	92.25	44.43	54.46	81.58
Orissa	87.58	67.41	129.91	41.18	62.22	66.18
Punjan	37.64	61.44	61.27	54.28	59.87	90.66
Rajasthan	36.89	58.28	63.29	39.02	52.97	73.67
Tamilnadu	51.69	74.94	68.97	44.12	55.64	79.30
Uttar Pradesh	68.91	70.64	97.55	57.23	69.30	82.58
West Bengal	69.49	82.05	84.69	40.12	44.58	89.99
All India	55.20	64.74	85.26	46.84	55.27	84.75

Note: Figures on Informal sector workers have been given by NSS, following both enterprise survey approach (Schedule 2.0) and household survey approach (Schedule 10).

Ent. stands for enterprise, HH for household and inf. for informal.

Source: See Table 3.1.

Table 4: Unorganised Sector Employment From Residual Approach: All India

Industry Division	Total Org Emp.in 2000	Unorg. Emp. as a % of Total Workers in 1999-00
Agriculture	1418000	99.41
Mining	1005000	55.73
Manufacturing	6616000	84.88
Utilities	987000	21.89
Construction	1149000	93.45
Trade	493000	98.79
Transport	3147000	78.34
Finance	1654000	65.18
Services	11494000	65.34
Total	27960000	92.98
Total Non-Ag.	26545000	90.20

Source: Figures on organized sector (public and organized private) are taken from Economic Survey, 2003-04, quoting figures reported by DGE&T, Ministry of Labour.

Finally, corresponding to each of the three digit industry divisions the organized industrial employment (total number of employees) as given by the Annual Survey of Industries (ASI) for 1999-00 has been deducted from the number of total workers as obtained from NSS household survey, which gives the per thousand distribution of workers across various industry divisions. Since both followed NIC-1998, the calculation could be undertaken straightaway. This, however, could be done only for the industry divisions included in the ASI sector and not for all activities in the economy. It is interesting to note from Table 5 that in some of the three digit divisions the

percentage of unorganized sector could not be calculated as the NSS figures on total number of workers in these divisions were nil (following the household survey) while the ASI following the enterprise approach did find non-zero workers. In one case (273) the number of workers reported by ASI corresponding to the organized or registered sector only, exceeded the total number of workers reported by NSS. However, at the aggregate level the share of unorganized manufacturing (non-ASI) sector comprises around 82 per cent of the total manufacturing employment (Table 5). This estimate is slightly lower than the one obtained from the DGE&T data (85 per cent), as given in Table 4. The range of variation (the difference between the lowest and the highest estimates) is very wide though a large number of industry groups tend to form a cluster in terms of the relative size of the informal sector (the coefficient of variation being 36.87 per cent).

Table 5: Share of Unorganised Sector (Other than ASI) Employment in Manufacturing (1999-2000)

Ind. Code	No. of Employees (ASI)	NON-ASI Emp. as a % of Total
014	142967	95.95502
142	5403	
151	156413	76.95168
152	86832	7.214433
153	311799	85.67475
154	720040	69.23155
155	72334	85.28193
160	472407	89.64894

171	1137749	78.39208
172	82899	96.75021
173	62577	66.56623
181	294746	87.77103
182	1710	98.17276
191	39619	78.83228
192	82229	90.50252
201	10808	94.22548
202	39572	96.80905
210	17565	93.74356
221	47055	74.85936
222	62342	86.67671
223	5111	
231	28181	
232	43698	53.30588
241	247318	11.90828
242	542941	64.84519
243	27094	
251	130291	53.5919
252	142008	81.61029
261	50351	46.19672
269	400724	87.02932
271	429726	44.35147
272	87388	53.31016
273	112992	-20.7392
281	108000	88.74275
289	171975	87.32927
291	211200	24.77308
292	214877	80.0395
293	42704	54.36803
300	17645	81.14518
311	81520	83.41282
312	57456	38.60457

313	44298	84.22158
314	17748	
315	24124	
319	21300	77.23958
321	41145	56.03393
322	33654	
323	39287	
331	43801	53.19582
332	5364	
333	19826	
341	81862	56.2626
342	27454	70.66364
343	179170	
351	26851	90.43599
352	28615	
353	6179	
359	123793	
361	24878	96.77836
369	103937	95.68767
371	174	
372	136	
401	120776	84.35979
Agg. Manufacturing	8172836	81.64795

Note: Blanks exist because of non-identification of workers by NSS though ASI had non-zero entries corresponding to these categories. The coefficient of variation (after dropping the missing observations) turns out to be 36.87 per cent.

Source: Figures on total number of employees in manufacturing at the three-digit level are taken from Annual Survey of Industries (1999-2000).

To obtain the total workers at the three-digit level the figures on per thousand distribution are taken from NSS 55th round, Report no. 458(55/10/2).

3 Formal-Informal Sector Linkages

The inter-linkages among the formal and informal sectors exist but they are not necessarily favourable to the informal sector workers (see Mitra, 1994 and Shaw, 1990). Through sub-contracting from the formal to the informal sector, inter-sectoral input linkages and recycling of waste products generated by the formal sector, the informal sector workers earn their livelihood but often they are not in a position to dictate the terms of transactions, and hence the trickle down effects of growth are limited. At times the informal sector workers are seen to work within this sector for almost their entire working life without being able to graduate to the formal sector though within the informal sector they have experienced upward mobility (see Papola, 1981; and Mitra, 2003). As regards the facets of interaction between the informal sector and the organized industrial growth, links may be taken to exist through the following sources: (a) labour market, (b) commodity market and (c) production process. On a priori grounds, the share of the informal sector and that of the organized industry in total work force may move in the same or opposite direction. If the informal sector is taken to be the outcome of sluggish employment growth in the organized industry, as suggested in the 'over-urbanisation thesis' then it would bear a negative relationship with the latter. Tokman (1978) argued that the informal sector shows both an 'autonomous component' i.e., activities being disassociated with those carried out in the rest of the economy, and

a segment that is closely integrated with the rest of the economy. Further, in his later work (Tokman, 1989), he highlighted the linkage between poverty and informal sector employment. While arguing that the chances of reducing the size of informal sector workers by absorbing them into modern activities are slim he postulates a negative relation between high productivity employment and the low productivity informal sector activities. In the study by Hemmer and Mannel (1989) the possibility of an inverse relation between industrial and informal sector employment exists. With an extension of the formal sector, they argued, demand for labour within this sector at a given minimum wage may increase (or decrease) depending upon the technological conditions, which in turn at a given volume of labour supply including the migrants reduces (or raises) the volume of labour in the informal sector. Stark (1982) argued that with the expansion of the modern sector new employment opportunities are created which may eliminate some of the informal sector jobs if the activities are competitive. On the other hand, the relationship can be complementary if the expansion of output and employment in the modern sector generate employment in the informal sector through inter-sectoral linkages. When both the forces are at work the net relationship may turn out to be competitive or complementary depending upon the relative strength of the forces.

Papola (1981) argued that the size of the informal sector is large in situations of both limited industrial spread and rapid industrialization. In the former case it is mainly a manifestation of residual absorption of labour whereas in the latter case complementary relationship exists between the industrial and informal sectors. Also, in this situation the informal sector is described to be no more of a low productivity one by virtue of its close linkage with the industrial sector and income percolating from this sector to the rest.

Using the city level data, Mitra (1994) observed that there is an inverse relation between the percentage of work force engaged as regular workers in organized industry and the percentage of work force constituting informal employment, which would include the informal sector employment as well as the informal employment in the formal sector.

However, a negative relationship does not mean that the absolute number of workers engaged in the informal sector decreases with an increase in organized industrial employment. The forces usually operating on industry and informal sector relationship are : (a) direct and indirect complementary, (b) direct and indirect substitution and (c) autonomous growth of informal sector resulting from natural growth of population. The second case makes the relationship negative even in terms of absolute employment, and, therefore, also in relative terms. On the other hand, (c) usually inflates the absolute size

of the informal sector employment when organized industrial employment may remain unchanged thus making the relationship negative in relative terms. In contrast to this, the first case suggests that industrial and informal sector employment move together at least in absolute terms whereas the relationship in relative terms will depend upon the magnitude of elasticity of informal sector employment with respect to the industrial employment. When all the forces are in operation, the relationship may still turn out to be positive in absolute terms but in relative terms it will depend upon the magnitude of elasticity. For example, if the elasticity of informal sector employment with respect to industrial employment is positive but very low in magnitude, the shares of industrial and informal sector employment would vary inversely. Based on the city level data Mitra (1994) observed that the partial elasticity coefficients of informal sector employment with respect to different components of the formal sector employment including the organized industry were extremely low in magnitude though positive in sign. And this would explain why in relative terms there is a negative relationship between organized/formal industry and informal sector employment. The inverse relation between industrialization and informal sector is indicative of the lack of strong inter-linkages and the absence of possibilities of complementary relationship between the sectors (Mitra, 2001). However, based on the NSSO's estimate of informal sector

the effect of industry and urbanization both on the former is found to be statistically insignificant (Table 6). In other words, states, which are highly industrialized and urbanized and states, which are not so, both show a large size of the informal sector in the rural as well as urban areas. This is in conformity with the view which Papola (1981) suggested: the large size of the informal sector in states with low level of industrialization is mostly of residual type whereas the same in industrialized states reveals complementary relationship between industry and informal sector. The possibilities of subcontracting result in a large size of the informal sector in the industrialized states, implying statistical insignificance of the coefficient of industrialisation as seen in Table 6.

Table 6: The Effect of Industry and Urbanization on Informal Sector

Exp. Var.	INFR1	INFR2	INFU1	INFU2
INDUS	0.34 (0.38)	-0.55 (-1.22)	0.44 (1.33)	-0.19 (-0.42)
URBAN	-0.81 (-1.16)	0.45 (1.28)	-0.16 (-0.61)	0.005 (0.01)
Intercept	70.43 (4.78)*	62.52 (8.42)*	41.77 (7.59)*	59.62 (8.22)*
Adj. R ²	-0.01	-0.01	0.004	-0.14

Note: INFR1 and INFR2 are the two alternative estimates of informal sector in the rural areas as given in Table 3. Similarly INFU1 and INFU2 are for the urban areas. INDUS and URBAN are the estimates of organized industry's share in net state domestic product and the percentage of population residing in the urban areas respectively. * represents significance at 5 per cent level.

4. Conclusion

The wage-productivity relationship in the organized manufacturing is quite weak in the Indian context. Only a small fraction of productivity growth gets transferred to the workers in terms of wage increase. Despite this pattern, decline in wage was seen to be crucial for raising employment in the organized manufacturing. Though labour market deregulations were not carried out explicitly state governments have allowed the firms to follow them informally. However, the empirical evidence does not seem to be suggesting any further deterioration in the extent of association between labour productivity and wages per worker in the organized manufacturing sector in India.

The other finding relates to the relative size of the informal sector. Since the share of the informal sector is equally high in the states which are highly industrialized in comparison to the states which are industrially backward sub-contracting and other indirect processes seem to be generating employment in the informal sector in the industrialized states. All this tends to suggest that the indirect effects of industry on living standards are beneficial. On the whole, no strong evidence is found to suggest any deterioration in the process of reforms while it will be equally erroneous to conclude that the trickle down effects are substantive.

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