Jobless Growth Based on a 2-Digit Industry-wise Analysis for Tamil Nadu: Pre and Post-reform Years: 1984-2006

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A. Balu* and B.S. Prakash**

Abstract

Analysing the ASI data for the state of Tamil Nadu at two-digit industry level, the paper finds that despite a relative decline in the growth of employment, value added and labour productivity, there is an increase in the employment elasticity (EE) during the post-reform years (1994-2006). Thus, although the post-reform growth in these variables is less than that in the pre-reform years (1984-1993), there is a high-base effect contributing to an increase in employment generated in the latter half of the period under focus. This is reflected in the employment elasticity for 10 out of 14 industries, derived by considering the joint impact of both output and capital on employment. The net effect is, therefore, a significant increase in the employment content of jobs at the 'all industries' level. Capital intensity has not altogether affected the employment creation process to give credence to the hypothesis of jobless growth in the state.

I. Introduction

For close to nearly two decades, the organised sector's growth in India is argued to be largely without growth in jobs. Marked for its characteristic of increased income (or output) with very little or negative growth in employment, the phenomenon of 'joblessness' (insofar as it is related to the manufacturing sector, considered traditionally the engine of growth), is generally attributed to increased capital intensity. The trend, observed to have prevailed at the national level is not studied much at the sub-national (i.e. states) level. Such studies are important as the phenomenon observed at the national level may not necessarily hold at the sub-national levels. Indeed, the policies of industrial promotion spelt

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out at the national level need to be scrupulously promoted at the sub-national levels in order that the State's industrial progress does not suffer. Further, while the characteristic of the lack of jobs needs to be ideally studied for both the organised and the unorganised sectors of a region, as the expansion/contraction of the organised sector is expected to influence the growth of its unorganised counterpart, the periodicity of data availability for the two segments generally restrict such an analysis. Besides, from a complementary perspective, it is not absolutely clear whether the expansion of the organised sector necessarily influences the growth of the unorganised sector, as the hypothesis of sustained presence and growth of the unorganised sector by itself (and for itself) has also been raised. In the light of this contentious background and desired interest, the present paper undertakes to investigate whether there is evidence of growth without a corresponding increase in jobs in the state of T. N. in the organised manufacturing sector (OMS) of the state. The study covers a period of 23 years from 1984 to 2006. The total period is divided into two sub-periods viz. the pre-reform years (1984-1993)[1] and post-reform years (1994-2006) in order that a comparative profile of the two periods can be drawn. In doing this, as an auxiliary objective, the paper seeks to test the hypothesis of competitive industrial atmosphere (specific to impact on employment by significant capital infusion expected in a period of economic liberalisation) adversely affecting the job-creation process in the state.

2. Brief Review of Studies

Before presenting the results of our analysis, we first take a look at the results of some other studies. Due to the limitation of availability of data for the entire industrial sector spanning both the organised and the unorganised sector units, a macro picture for the combined industrial sector can be had only on the basis of Gross State Domestic Product (GSDP) data. Based on this data, Shetty (2003) observes significant industrial progress in the state with a rise in the sector's share in GSDP. Our specific objective is to see whether this increase in income is also accompanied by employment growth. On this front, albeit limited to the organised manufacturing sector, there is evidence of continuous increase in the State's employment share from 13.4 percent in 1984 to 19.1 percent in 2006. Employing data on employment by National Sample Survey Office (NSSO), which by its nature covers both the organised and the unorganised segments, Ramaswamy (2007) observes that during the period 1994-2005, among the 14 major states in India, T. N. had the highest share in employment (21.1 percent). Such a trend is also echoed by Ruddar Dutt (2006). However, in the years immediately following the introduction of reform measures, a fall in the employment elasticity (w.r.t. output based on GSDP) of secondary sector is observed by Bhattacharya and Sakthivel (2004). A similar trend is also reported for the period 1986-2000 by Das (2007). Amidst these contrasting findings, the present paper aims to: (i) test the jobless growth hypothesis in the state and (ii) identify specific

industry groups which have performed well with respect to employment generation as opposed to those which have not. The gap in the scope of the study, on account of not being able to include the unorganised segment to make it duly comprehensive is partially filled by providing, towards the conclusion, the results of a study carried out by the authors for the period of 2001-06 using the district level data for the state.

3. Database and Methodology

Using the Annual Survey of Industries (ASI) data published by CSO, the study analyses data on three variables viz. employment (Empt), net value added (NVA) and fixed capital (FC). To permit temporal analysis, the two value based variables, value added and fixed capital, have been deflated by the all India wholesale price index (WPI) and the index for machinery and tools respectively. The analysis is supplemented by two derived variables viz. labour productivity (NVA ÷ Employment) and capital intensity (FC ÷ Employment). The growth rates are computed by the linear trend method (Log Y = a + bT). The phenomenon of jobless growth (vis-à-vis the process of job creation) is assessed by studying the trends in employment elasticity estimated by the fitting of equation: Log (Empt) = $b_0 + b_1$ Log NVA + b_2 Log FC + U_t. As opposed to the adoption of simple ratio indicator for employment elasticity (defined as the ratio of growth rate in employment to growth rate in value added which not only ignores the joint or simultaneous impact of capital and output on employment but also yields ambiguous values at times[2]), the above relationship provides estimates of employment elasticity by accounting for the combined impact of both output and capital on employment. The impact of capital intensity (CI) on employment is assessed by running a regression: Log (Empt) = $b_0 + b_1$ Log CI + U_t. Each of these computations have been made for fourteen industries[3], separately for the pre- and the post-reform periods, to arrive at an overall empirical verification of the employment situation in the state.

4. Employment Growth

Table 1 presents the growth rate in employment by industries classified by selected range-class[4]. At the 'all Industries' level, there is a decline in the average growth rate in employment over the two periods being compared. The number of industries registering positive growth rates was 11 in the pre-reform years and 9 in the post-reform years. But this profile does not by itself establish a declining trend in the employment creation process as, over time, we can neither expect a uniformly high increase in growth rate to prevail nor can we expect the same industries to perform uniformly well. In other words, variation in both the growth rates registered and the performance of industries in terms of growth rate are to be expected. What is therefore relevant is to identify industries that have shown better growth performance and see whether there is a structural change in terms of the relative percentage share in employment across industries as a result of

Table 1 : *Employment growth by industries: 1984-2006*

Period	Growth Rate in Employment GR (%)				Average GR for 'all Industries
	Negative GR	0-2 Percent	2-4 Percent	Above 4 Percent	
Pre-reform	Wood (-3.1) Beverage & Tobacco (-2.2) Basic Metals (-0.9)	Non-metallic (0.3) Metal Products (0.8) Food (1.0) Machineries (1.5) Transport (1.7)	Paper (2.2) Textiles (3.4) Chemicals (4.0)	Rubber (4.1) Leather (10.8) Other Manufacturing (10.8)	2.6
Post-reform	Transport (-0.1) Food (-0.4) Leather (-0.5) Beverage & Tobacco (-1.1) Machineries (-3.2)	Paper (0.3) Chemicals (0.6) Rubber (0.8) Basic Metals (1.3)	Non-metallic (2.2) Textiles (3.4)	Wood (5.7) Other Manufacturing (6.0) Metal Products (7.5)	1.4

Note : Figures within brackets in columns 2 to 5 (as also in the last column) are the actual growth rates (%) in employment

Table 2 : *Value added growth by industries: 1984-2006*

Period	Growth Rate in NVA (%)				Average GR for all Industries
	Negative GR	0-2 Percent	2-4 Percent	Above 4 Percent	
Pre-reform	Wood (- 5.2) Beverage and Tobacco (- 6.5)		Metal Products (3.3)	Transport, Food, Machineries, Paper, Basic Metals, Chemicals, Rubber, Non-metallic, Leather, Textiles, Other Manufacturing	7.9
Post-reform	Leather (- 2.8) Beverage and Tobacco (- 1.4)	Food (0.3) Rubber (0.7) Chemicals (1.2)	Paper (2.2) Machineries (2.5) Non-metallic (3.3)	Basic Metals (4.9) Textiles (5.6) Other Manufacturing (6.0) Metal Products (12.1) Transport (13.5) Wood (22.9)	3.6

Note : (i) Figures within brackets as also in the last column are the growth rates In the pre-reform period, in the 'above 4 percent' group, the growth rates registered vary from 5.4 percent for 'transport' industry to 19.1 percent in case of 'other manufacturing'. The actual growth rates for the industries in this group are: transport (5.4), machineries (5.5), basic metals (5.6), paper (6.4), chemicals (6.8), food (7.1), non-metallic (8.1), textiles (12.1), leather (13.2), rubber (16.7) and others (19.1).

the growth witnessed in the state.

Specific industries such as 'metal products' and 'wood' have improved performance sharply while 'leather' has registered a sharp decline in employment growth. 'Textiles', on the other hand, has maintained uniform growth status during the two periods in this regard. 'Other manufacturing' has retained its position in the high-growth-slot (of 4+ percentage growth) in spite of a steep decline in its growth rate during the pro-reform period. Despite these differential growth profiles, the overall impact in terms of a structural change is seen only in two industries viz., textiles and machineries. All other industry groups have more or less retained their respective employment shares[5]. While 'textiles' has gained impressively in employment share (an increase from 26 to 39 percent over 1983 to 2006), machineries has lost by 5 percentage points with its share in employment having declined from 12 to 7 percent.

5. Growth in Value Add

Table 2 presents the growth rates registered in value add. Once again, as in the case of employment, there has been a decline in the overall performance of industries in the post- reform period when compared to the pre-reform years. However, in terms of the number of industries registering positive growth rate in value add, there has been no change in the two periods that we are focusing on. Among industries, however, 'wood' and 'metal products' have shown improvement, while 'food, rubber and chemicals' have declined.

In terms of structural shift[6] as a result of the growth process, two industries that have notably gained are: 'transport equipment and parts' (from 14 to 24 percent) and 'textiles' (from 17 to 24 percent). As in the case of employment, 'food' and 'chemicals' have lost in terms of percentage share of value add (food from 11 to 6 percent and chemicals from 14 to 7 percent). Like 'textiles' in the case of employment, the 'transport' sector has gained majorly in the case of value add. The remaining 10 industry groups have by and large maintained their share in output.

6. Employment Elasticity

The employment content of growth can be different across industries as growth in income (value added) could be a result of any of the three contributors viz. labour, capital and a host of 'residual' factors. The growth in fixed capital among industries for both the pre- and the post-reform years have, however, been more or less the same (7.5 percent for pre-reform years and 7.8 percent for the post-reform years)[7]. While the impact of 'capital intensity' on employment therefore needs to be seen separately, we examine the trends in employment elasticity (EE), estimated for the combined or joint impact of both 'output' and 'capital'. Table 3 presents the results of EE w.r.t. output (NVA).

At the 'all Industries' level there is evidence of increased employment

Table 3 : *Employment Elasticity (EE) by industry (w.r.t. NVA): 1984-2006*

Period	Negative	0. 00 to 0. 20	0.21 to 0.40	Above 0.40	All Industries
Pre-reform	Food (- 0.13) Basic Metals (- 0.10) Chemicals (- 0.03)	Rubber (0.02) Textiles (0.10) Transport (0.11) Machineries (0.13) Wood (0.14) Paper (0.17) Non-metallic (0.20*)	Metal Products (0.21) Leather (0.22) Beverage & Tobacco (0.23) Other Manufacturing (0.27)		**0.18** (1.72)
Post-reform	Non-metallic (- 0.18)	Paper (0.10) Leather (0.10) Beverage & Tobacco (0.11) Chemicals (0.12) Rubber (0.12) Basic Metals (0.19)	Food (0.24) Wood (0.35*) Metal Products (0.40*) Machineries (0.32) Transport (0.37*)	Textiles (0.45*) Other Manufac turing (0.50*)	**0.40*** (1.40)

Note : Figures within brackets in the 'all Industries' column denotes the DW (Durbin-Watson). Values indicating controlled level of serial correlation in the time series data used.

* Significant at 5 percent level

content in which EE is significant at a 5 percent level for the post-reform years. At the sub-industries level, 'textiles' has shown a major improvement in its employment content with its EE having increased from 0.10 in the pre-reform years to a significant 0.45 in the post-reform years. Other industries that have shown a similar improvement over the two periods of comparison are: transport (0.10 to 0.37), machineries (0.13 to 0.32), wood (0.14 to 0.35) and 'other manufacturing'(0.27 to 0.50). More notably, three industries – food, basic metals and chemicals – have shown a turn-around from a position of declining employment content in the pre-reform years to a position of increasing employment content in the post-reform years. Significantly, out of the 14 industry groups (excepting 4 industry groups viz. non-metallic, paper, leather and beverages and tobacco that have registered a declining trend in EE), as many as 10 industry groups have shown improvement in the employment content of their income growth. These trends are thus suggestive of the fact that although in the aggregate there is a decline in employment growth per se, even the relatively lower employment growths registered contained a higher degree of labour input (or employment). As our interest is to see whether there has been a distinct improvement in this process or not (so as to provide the required evidence for accepting or not-accepting the hypothesis of jobless growth), we now proceed to examine this aspect in conjunction with labour productivity trends.

7. Labour Productivity and Employment Elasticity

Ideally, one would like to witness increase in employment elasticity (EE) with improvement in labour productivity (LP), but associated with a decline in both value add and employment growths, as is to be expected, at the 'all Industries' level, there is a corresponding decline in the growth rate of labour productivity too (Annexure 1). In light of this, with a view to identifying industries registering improvement in both LP growth and also in EE, a two-way classification of LP growth and EE is made (Table 4). Based on this classification, if the industries showing increase in both LP growth and EE trend can be identified as the 'productive employment generating industries', or best performing industries, four industries viz., machineries, transport, metal products and wood meet this criteria. A second grouping of the industries can be 'employment creating (i.e. employment elasticity has increased), though with decreasing (i.e., lower than the growth rate in LP of the pre-reform years) yet positive LP growth[8]'. These industries are grouped under 'moderately performing industries'. Six industry groups, viz., food, chemicals, basic metals, textiles, rubber and 'other manufacturing industries' fall under this group in view of their declining LP

Table 4 : *Bi-variate classification of industries by labour productivity growth and employment elasticity*

Period	Range of Employment Elasticity	Labour Productivity Growth (%)				All Industries
		Negative	0-2 percent	2-4 percent	Above 4 Percent	
Pre-reform	Negative			Chemicals	Food Basic Metals	**5.2 (0.18)**
	0.00 to 0.20	Wood		Machineries Transport	Textiles Paper Rubber Non-metallic	
	0.21 to 0.40	Beverages & Tobacco		Leather Metal Prods.	Other Manfg.	
	Above 0.40					
Post-reform	Negative		Non-metallic			**2.2 (0.40)**
	0.00 to 0.20	Beverages & Tobacco Leather Rubber	Paper Chemicals	Basic metals		
	0.21 to 0.40		Food		Wood Metal prods Machineries Transport	
	Above 0.40	Other Manfg.		Textiles		

Note : In the last column figures outside the brackets are growth rate in labour productivity and those inside the brackets, employment elasticity

Table 5 : *Impact of capital intensity on employment*

Industry	Constant	Coefficient (t-value)	Adjusted R-square	F	DW
Pre-reform Period					
Food	10.9	0.07 (1.2)	0.05	1.42	1.82
Beve & Tob.	11.6	-0.21 (-1.9)	0.21	3.44	1.77
Textiles	7.1	0.47 (7.0)	0.84	49.6	3.02
Wood	7.0	0.16 (0.98)	-0.01	0.95	1.11
Paper	11.2	-0.06 (-0.76)	-0.05	0.57	1.25
Leather	6.3	0.41 (0.43)	-0.10	0.19	0.29
Chemicals	7.7	0.32 (2.31)	0.33	5.33	1.85
Rubber	3.6	0.50 (2.8)	0.43	7.90	2.10
Non-metallic	11.1	-0.06 (-0.08)	-0.05	0.62	1.50
Basic metals	10.3	0.002 (0.01)	-0.13	0.00	0.75
Metel Prods.	8.2	0.15 (1.15)	0.04	1.33	1.44
Machineries	7.1	0.38 (2.32)	0.33	5.4	2.56
Transport	9.7	0.15 (0.66)	-0.07	0.43	2.54
Other manfg.	2.9	0.50 (6.41)	0.82	41.1	1.83
All Industries	**8.3**	**0.46 (4.01)**	**0.63**	**16.1**	**1.95**
Post-Reform Period					
Food	12.5	-0.06 (-0.73)	-0.04	0.53	1.22
Beve & Tob.	9.6	-0.02 (-0.31)	-0.08	0.10	2.35
Textiles	10.2	0.23 (0.88)	-0.02	0.77	0.37
Wood	5.8	0.25 (2.37)	0.28	5.63	1.71
Paper	11.2	-0.05 (-0.76)	-0.04	0.57	3.10
Leather	14.7	-0.32 (-3.26)	0.45	10.65	2.01
Chemicals	9.2	0.21 (2.83)	0.37	7.99	1.41
Rubber	7.5	0.22 (1.23)	0.04	1.50	1.10
Non-metallic	8.8	0.14 (2.58)	0.32	6.63	2.14
Basic metals	9.0	0.11 (1.15)	0.03	1.32	1.26
Metal Prods.	3.5	0.60 (1.55)	0.11	2.41	0.58
Machineries	17.2	-0.48 (-3.91)	0.54	15.32	1.50
Transport	12.5	-010 (-1.83)	0.16	3.35	0.46
Other manfg.	15.1	-0.44 (-1.78)	0.15	3.16	1.10
All Industries	**12.3**	**0.13 (1.88)**	**0.17**	**3.53**	**0.74**

Note : $t_{(8,\ 0.05)} = 2.31$; $t_{(11,\ 0.05)} = 2.20$; $F_{(1,8:\ 0.05)} = 5.32$ and $F_{(1,11:\ 0.05)} = 4.84$

growth rate but positive values of EE. The remaining four industries (viz. beverages & tobacco, paper, leather and non-metallic) fall under the category in which both the LP growth and EE are declining. These industries are, therefore, grouped under 'low performing industries'. Of these four industries, the first three industries viz. beverages & tobacco, paper and leather are marked for declined employment content even though their employment elasticity is positive for the post-reform years (their respective values of EE in the post-reform years being 0.11, 0.10 and 0.10 respectively). The performance of the remaining one industry viz., non-

metallic needs further examination as the values of EE for this industry show ambiguity[9] in a cross verification of the estimated employment elasticity using two alternative methods viz. 'ratio estimation' and 'regression estimation'. The EE (w.r.t. FC: Annexure 2) is also positive (0.16) for the pre-reform years at the 'all Industries' level and close to zero (-0.01) for the post-reform years. This suggests that at the level of 'all Industries', while in the pre-reform years capital had a positive impact on employment creation, in the post-reform years, its effect was nearly neutral. At the sub-industries level, however, in the pre-reform years it was positive for 11 industries while in the post-reform years it was positive for 10 industries. These trends provide us with the initial indication of the impact of capital on employment levels in the state to be favourable both during the pre- and the post-reform years. We, however, turn towards a more direct assessment of this situation in the following section.

8. Impact of Capital Intensity on Employment

The result of regressions run to determine the extent of impact of capital intensity (CI) on employment is presented in Table 5. For the pre-reform years, at the 'all Industries' level, there was a significant positive impact of CI on employment. This means that during the period of pre-reforms, 1 percent increase in CI contributed to creating employment to an extent of 0.46 percent. Our null hypothesis is: the effect of CI on employment is not significant. This hypothesis is accepted both at the 'all Industries' level (the value of the coefficient being less than the critical value 2.31) as also at the individual industry level for 10 out of 14 industries[10]. For the post-reform years also, the results are the same – both at the 'all Industries' level as also at the sub-industries level; the response to employment generation by 1 percent increase in CI is, however, lowered to 0.13 percent. Further, while for 7 industries in the post-reform period there is indication of positive effect of CI on employment, for the remaining 7 industries there is indication of declined employment creation associated with every marginal addition of investment made[11]. The trend is in sync with the process of modernisation aided by significant capital infusion, both expected and observed to have obtained, in a period of liberalised economic policies pursued. On the basis of these trends, therefore, we conclude that despite indication of adverse impact of capital intensity on employment creation in the post-reform years, the effect was not 'altogether negative'.

9. Conclusion

Despite a decline in the growth rates registered for employment, value add and labour productivity, the growth process has not had a negative impact on the job creation process in the State. The findings are thus supportive of the observation made by others like Ramaswamy and Ruddar Datt who had reported a higher share of industrial employment in the state. Although the present study has dealt with the OMS, an analysis made for the UMS units at the district-level

in the state is supportive of the job creation process in as many as 17 of the 29 districts in the state (Prakash & Balu, 2011) as a result of which a positive employment elasticity of 0.24 is observed for the UMS during the period 2001-06[12]. The improved values of employment elasticity (particularly w.r.t. income) and positive impact of employment creation observed to be associated with capital intensity trends in the present study are thus suggestive of empirical support needed for the non-acceptance of the hypothesis of jobless growth in the State.

Notes

1. The demarcation of the period does not exactly coincide with the year of initiation of reforms (1991). This is done partly with a view to allowing a time gap for the process of reform-measures to set-in, and partly to provide an adequate number of years in the pre-reforms period ideally desired for trend analysis.

2. The ambiguous values in the method of taking the EE as the ratio of growth rates in employment and value added relate to situations where either or both of the two individual growth rates is/are negative. See Kannan and Raveendran, 2009, p-83.

3. Concordance between the three NIC-codes (i.e. NIC 1970, NIC 1987 and NIC 1998) is established by suitably clubbing the industries as indicated below.

Sl. No.	Description as per NIC-1987	NIC-1998 Code
(i)	Food Products (20-21)	151+ 152 + 153 + 154
(ii)	Beverages and Tobacco (22)	155 + 16
(iii)	Textiles and Textile Products (23-26)	171+172 + 173 + 181
(iv)	Wood and Wood Products (27)	20 +361
(v)	Paper and Paper Products (28)	21+22
(vi)	Leather and Leather Products (29)	19
(vii)	Chemicals and Chemical Products (30)	24
(viii)	Rubber, Plastic and Petroleum Products(31)	23 + 25
(ix)	Non-metallic minerals (32)	26
(x)	Basic Metals and Alloys (33)	27
(xi)	Metal Products (34)	28
(xii)	Machinery (35+36)	29 + 30 + 31 +32
(xiii)	Transport Equipment and Parts (37)	34 + 35
(xiv)	Other manufacturing Industries (38)	33+369

4. In a study of total manufacturing sector (TMS) at the all-India level, comprising of both the organised and the unorganised sectors (Prakash, 2006), the growth rate in employment for the three periods 1985-95, 1995-01 and 1985-01 were estimated as: – 0.8 percent, 1.7 percent and 0.2 percent respectively. The corresponding growth rates in value added were: 5.6 percent, 3.2 percent and 4.7 percent respectively. From these results, as also from the growth rates in employment and GDP for the country as a whole (seen from the experience of past several decades), a GVA to employment growth ratio of 5:1 (i.e. an employment elasticity of 0.20) has been the trend in India. In this context, it is relevant to note the findings of Mazumdar & Sarkar (2004, p-3019) who base their conclusion on 'an end of the experience of jobless growth', on an observed employment elasticity in the organised manufacturing from '-0.16' in 1980-86 to '+0.33' in 1986-96. The range-class for growth rates (and EE) are, therefore, considered as: below 0, 0-2, 2-4 and above 4.

5. The relative percentage share in employment for selected years is as follows:

Indy.	(i)	(ii)	(iii)	(iv)	(v)	(vi)	(vii)	(viii)	(ix)	(x)	(xi)	(xii)	(xiii)	(xiv)
1984	15.0	1.9	25.9	0.7	4.6	3.5	11.0	2.7	4.3	4.9	2.6	12.2	10.2	0.6
1994	13.5	1.1	31.1	0.5	4.1	6.7	11.6	3.0	3.5	2.8	2.3	10.1	8.6	1.1
2006	10.6	0.8	38.7	0.7	3.5	5.3	10.0	3.0	3.3	3.4	4.2	6.8	8.1	1.5

6. The relative share (%) in value added for selected years shows the following:

Indy.	(i)	(ii)	(iii)	(iv)	(v)	(vi)	(vii)	(viii)	(ix)	(x)	(xi)	(xii)	(xiii)	(xiv)
1984	11.1	1.9	17.3	0.4	5.7	3.5	14.2	2.0	4.7	4.1	2.8	17.4	14.1	0.8
1994	9.2	0.8	24.2	0.1	6.8	6.8	9.9	8.4	6.4	2.4	1.9	12.5	9.4	1.4
2006	5.7	1.0	24.0	0.6	3.4	1.8	6.5	4.8	4.0	3.6	3.5	15.5	24.0	1.5

7. While not a single industry, both in the pre-reform and post-reform years, has registered negative growth rate in fixed capital (FC), as many as 10 industries, both during the pre- and the post-reform years, have registered high growth rates, in the 'above 4 percent' slot. Among these industries, in the pre-reform years, the extent of FC growth varies from 4.3 percent in 'machineries' to 33.5 percent in 'other manufacturing'. The corresponding range of variation for the post-reform years vary from 4.2 percent for 'textiles' to 24.2 percent in 'wood' products industry.

8. The pre- and the post-reform year LP growths in these six industries are respectively: (i) food (6.0 percent and 0.71 percent); (ii) chemicals (2.7 percent and 0.6 percent); (iii) basic metals (6.5 percent and 3.6 percent); (iv) textiles (8.5 percent and 2.1 percent); (v) rubber (12.2 percent and – 0.04 percent) and (vi) 'other industries' (7.5 percent and – 0.04 percent).

9. The ambiguity about non-metallic industry is from the different sign (+/-) the estimate of employment elasticity (EE) carry for the post-reform years by the two methods viz. the ratio method and the regression method. By the ratio estimate the EE for the post-reform year is a high 0.67 (the two individual growth rates in employment and NVA being 2.2 and 3.3 respectively) but from the regression estimate it is – 0.18. The change in sign, though admissible in

the latter method, renders ambiguity to the values warranting a closer examination.

10. Even in the case of these four industries (viz. textiles, rubber, machineries and 'other manufacturing'), the non-acceptance of the hypothesis carries the same interpretation as was stated for 'all Industries' for the pre-reform years. That is, the percentage of employment created for every 1 percent increase in CI was relatively higher for these four industries (varying from 0.38 percent for 'machineries' to 0.50 percent for both 'textiles' and 'other manufacturing'). In the remaining ten industries, CI had even less impact on employment creation. This is to say that in the other ten industries 'capital' was not a major factor influencing the creation of employment.

11. This conclusion is made from the negative sign of the regression coefficient for seven industries viz. food, beverage & tobacco, paper, leather, machineries, transport and 'other manufacturing' industries. Conversely, the other seven industries (viz. textiles, wood, chemicals, rubber, non-metallic, basic metals and metals), by virtue of the positive sign for their coefficient (of CI), continued to have varying degree of employment creation potential ranging from 0.11 percent for 'basic metals' to 0.60 percent for 'metal products'.

12. Since the study was at district level, paucity of data to only two points of time (2001 & 2006) has limited the scope of the study particularly in estimating the growth rates by the point-to-point method. Nonetheless, to the extent that it provides an indication of the large unorganised sector's performance in the first quinquennium of a decade closer to the present times it is significant. Furthermore, whereas its disaggregated analysis is not by industry as is the case in the present study, the study on UMS by its district level analysis has identified districts performing well distinguishing them from those that have lagged behind.

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Annexure 1 : *Growth in labour productivity (LP) by industry: 1984-2006*

Period	Growth Rate in LP (%)				Average GR for all Industries
	Negative GR	0-2 Percent	2-4 Percent	Above 4 Percent	
Pre-reform	Wood (- 2.2) Beverage & Tobacco (- 4.4)		Leather (2.2) Metal Products (2.4) Chemicals (2.7) Transport (3.7) Machineries (3.9)	Paper (4.1) Food (6.0) Basic Metals (6.5) Other Manufg (7.5) Non-metallic (7.8) Textiles (8.5) Rubber (12.2)	5.2
Post-reform	Beverage & Tobacco (- 0.3) Leather (- 2.3) Rubber (- 0.04) Other Manufacturing (- 0.04)	Chemicals (0.6) Food (0.7) Non-metallic (1.1) Paper (1.9) Textiles (2.1)	Basic Metals (3.6)	Wood (16.3) Metal Products (4.2) Machineries (5.8) Transport (13.6)	2.2

Note : The steep decline in the growth of 'other manufacturing' also needs closer examination just as in the case of non-metallic industry as stated in end note 9 above.

Annexure 2 : *EE w.r.t. (with respect to) fixed capital (FC)*

Period	(i)	(ii)	(iii)	(iv)	(v)	(vi)	(vii)
Pre-reform	0.14	-0.10	0.25	0.21	-0.05	0.61	0.32
Post-reform	0.01	0.03	0.14	-0.10	0.03	-0.11	0.14

Period	(viii)	(ix)	(x)	(xi)	(xii)	(xiii)	(xiv)	All Industries
Pre-reform	0.37	-0.14	0.18	0.15	0.18	0.21	0.19	0.16
Post-reform	0.27	0.18	0.10	0.22	-0.35	-0.30	0.22	-0.01

Notes : (i) Description for industries is as per details in end note 3.
(ii) It is notable that for five industries in the post-reform period there is an increase in the EE and for three of these five industries, there is a turn-around from job-loss to job-creation. It is equally notable that for the other nine industries there is a relative decline in this respect with the turn-around for four of these 9 industries being for worse. For the other five industries, despite the decline, there is positive EE in the post-reform years.

□

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