

Employment and Wages in Manufacturing Industries

Trends, Hypothesis and Evidence

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The decline in registered manufacturing employment that took place in the 80s is widely believed to reflect substitution of capital for labour, as the wage rate reportedly increased rapidly because of growing rigidities in the labour market. How valid is this proposition? Without getting into the analytical differences on the relationship between labour market behaviour and economic performance, this study examines the trends in wages, and (as a measure of labour market distortions) the power of organised labour. Reassessing the postulated relationship between earnings, capital intensity and employment, the study suggests an alternative explanation for the changes in employment.

THE decline in the growth of employment in the manufacturing sector in the 80s and in particular the fall in the number of workers in registered manufacturing are by now accepted facts. While the growth rates in real net value added and real earnings per worker (earnings, hereafter) in registered manufacturing improved, the absolute number of workers employed declined (Figure 1). These tendencies are discernible in a number of major industry groups (Table 1).¹ Perceiving them to be part of an economy-wide phenomenon, the Planning Commission (1990) favoured serious changes in the development strategy.²

Isher Ahluwalia, however, identified policy-induced rigidities in the labour market as the principal reason for the decline in employment, though she mentions other possible reasons like the growth of contract labour and spill over of employment into the unregistered sector. Identifying consumer non-durable goods industries in registered manufacturing as accounting for the bulk of the decline, she argued: "The sharp increase in the capital-labour ratio in the first half of the 80s was associated with a sharp increase in the real wage rate during this period.... While the cause and effect can be debated at length, the data seem to suggest that the consumer non-durable goods sector experienced the maximum increase in capital intensity as well as the maximum increase in the real wage rate during this period" [Ahluwalia 1992: 82-84]. Associating the increase in the real wage rate with the reportedly growing labour market rigidities—citing evidence on the increase in disciplinary action against workers between 1960 and 1975 and the Indian worker's preference for job security than for higher earnings—she further said: "This makes for inflexibility in hiring and firing possibilities and rigidities in the labour market" [Ahluwalia 1992: 84].

The World Bank also offers a similar explanation. Claiming that the real wage rate increased at 7.2 per cent per annum in the first half of the 80s, the Bank argued: "...employers responded [to the increase in wage rate] by virtually stopping new hiring and retrenching existing workers to the extent possible". The study added: "The estimates... point to a significant trade off between the higher real cost of labour and employment. This suggests that the faster growth of real wages in 1980s indeed did play an important role in slowing employment creation" [The World Bank 1989: 109-10].

These views are consistent with the trade theoretic perspective on the principal problem with India's industrial policy. Analysing Indian experience between 1960 and 1980, Robert E B Lucas attributes low employment growth to import substituting industrialisation in general and the policy-induced rigidities in non-agricultural labour markets in particular: "...[a] rising industrial wage has been a significant factor in the observed move toward more capital intensive techniques... Since the scope and coverage of these job security laws has increased through time, it again seems likely that they have contributed to the trend towards reliance on more capital intensive techniques within many manufacturing industries" [Lucas 1988: 189-90].

These propositions—based on (simplistically) neoclassical percepts—form a serious viewpoint, especially in the present context of policy reforms.³ Their analytical and empirical validity can, however, be contested on a number of substantive issues. Firstly, these studies seem to have ignored the possible role of human capital variables—namely, skill, education and experience—in increasing the wages as these could be considerable in a period of structural

changes in the composition of industrial sector.⁴ Second, the orthodox view seems to ignore the effect of a reduction of wages, mediated by aggregate demand, on output growth [Taylor 1988]. Third, evidence on the relationship between the labour market institutions and economic performance is ambiguous, as discernible from the recent European experience in general and the Scandinavian experience in particular, where corporatism seems to have positively influenced industrial relations and hence macroeconomic performance [Freeman 1988].

Given such ambiguity, both in theory as well in experience, a close look at the orthodox view could, therefore, be of value in understanding the relationship between labour market behaviour and output performance in India's manufacturing sector. In doing so, we propose to examine (a) the concept of wage rate/wages as used in the studies mentioned above (Section I), (b) evidence on the reportedly growing rigidities in the non-agricultural labour market (Section II), and (c) the validity of the postulated relationship between wages, capital-labour ratio and employment at a disaggregated level (Section III). Before concluding, a provisional alternative explanation for the observed decline in registered manufacturing employment in the 80s is suggested (Section IV).

I

Distinction between Wage Rate and Earnings

Ahluwalia and the World Bank use *Annual Survey of Industries* (ASI) data on 'wages to workers' to compute the wage rate (or wages).⁵ As the ASI definition includes all payments made to workers—excepting lay off payments not made by the employer and the imputed value of benefits in kind—

it evidently refers to workers' *total earnings*, which covers not only the wage rate—that is, the basic wage plus dearness allowance, wherever applicable—but also all *additional* remuneration for workers' *additional* effort.⁶ Conceptually, earnings per worker is a function of the wage rate for the standard working day, remuneration for additional hours of work (and more shifts) and incentive income for more intensive work that is linked to output. In the decade beginning 1979-80, while the employment growth turned negative, total person days (or mandays) worked in registered manufacturing—and hence mandays per worker—recorded a positive trend growth rate; suggesting that the observed increase in earnings per worker could, at least partly, represent his (or her) compensation for greater effort and may not necessarily imply an increase in the wage rate, as has been argued (Figure 2).⁷

Admittedly, since the definition of workers in ASI includes contract (or casual) workers, it is arguable that all or most of the additional mandays worked may well have been done by contract workers at the market clearing wage rate, with little additional effort by the supposedly unionised permanent workers. This proposition is examined using the labour statistics data for the census sector of ASI.⁸ The share of casual workers in the total employment more than doubled from 4.6 per cent in 1980-81 to 10 per cent in 1986-87. However, as their proportion in the total mandays worked in 1986-87 is only 8.9 per cent, contract workers' contribution to mandays worked does not seem to be disproportionate to their share in employment. An estimate—assuming that the proportion of contract workers in total employment in the census sector is the same for ASI as a whole and that the share of mandays worked by casual workers in 1980-81 is same as in 1986-87—suggests that between 1980-81 and 1986-87 while the mandays per worker for *all* workers increased by 16 per cent, the same for casual and permanent workers increased by 15.8 per cent and 16.7 per cent respectively. There is, thus, little basis to argue that casual workers account for all (or most) of the observed increase in mandays worked in the 80s, though their share in total employment has gone up.

We examine the trends in earnings per worker and earnings per manday, although the latter as a proxy for the wage rate ignores additional remuneration due to plausible intensification of the working day. While earnings per worker in registered manufacturing increased at 3.2 per cent in the decade beginning 1979-80, earnings per manday increased at only 1.6 per cent per annum, which is less than the corresponding real per capita GDP (hereafter per capita income) growth rate during the same period (2.7 per

cent) (Table 2). At a disaggregated level, growth in earnings per manday ranges from (-)1.3 per cent in leather (NIC 29) to 3.7 per cent per annum in repair services (NIC 97), with no statistically valid trend for (i) beverages, (ii) cotton textiles, and (iii) wool and synthetic fibre textiles (NIC 22, 23 and 24).

A comparison of the trends by use-based industrial classification for the same period suggests that in consumer non-durable goods industries, accounting for nearly half the registered manufacturing employment, while earnings per worker increased at 3 per cent, earnings per manday rose by a mere 0.5 per cent per annum, which is less than one-third the average for registered manufacturing (1.6 per cent). The observed divergence between the two measures of wages in

these industries seems to be consistent with the decline in employment at the rate of 1.6 per cent and the growth in mandays per worker 2.3 per cent per annum; corresponding figures for registered manufacturing are (-)0.5 per cent and 1.5 per cent per annum respectively.

Ahluwalia, as noted earlier, observed that inverse movement between employment and wage rate in these industries was associated with an above average increase in capital-labour ratio. The foregoing evidence, however, suggests that while earnings per worker undoubtedly went up in the 80s, it was mainly on account of an above average increase in the number of days worked per worker. The rise in earnings per manday in consumer non-durable goods industries, as shown above, is considerably lower (0.5 per

TABLE 1: TRENDS IN EMPLOYMENT AND EARNINGS IN REGISTERED MANUFACTURING, 1973-74 TO 1988-89

| Industry Group | Employment Growth in | | Earnings Per Worker | | Share of Employment |
|----------------|----------------------|--------------------|---------------------|--------------------|---------------------|
| | 1973-74 to 1979-80 | 1980-81 to 1988-89 | 1973-74 to 1979-80 | 1980-81 to 1988-89 | |
| 20-21 | 0.3 | (-)3.8 | 5.7 | 8.9 | 13.2 |
| 22 | 4.5 | (-)0.3 | 3.1 | 5.1 | 4.6 |
| 23 | (-)1.6 | (-)3.6 | 2.1 | 2.0 | 20.0 |
| 24 | 4.4 | 2.9 | 3.0 | 1.2 | 3.2 |
| 25 | (-)1.6 | (-)3.4 | 3.0 | 2.9 | 5.7 |
| 26 | 3.8 | 3.7 | 1.8 | 1.2 | 1.3 |
| 27 | (-)0.2 | (-)1.5 | 3.1 | 3.7 | 1.4 |
| 28 | 1.0 | (-)0.8 | 3.1 | 2.7 | 4.5 |
| 29 | 5.2 | 5.1 | 1.7 | (-)0.3 | 0.9 |
| 30 | 4.2 | 2.6 | 2.8 | 3.9 | 2.0 |
| 31 | 3.5 | 2.0 | 3.5 | 3.2 | 5.4 |
| 32 | 3.5 | 1.9 | 2.4 | 2.2 | 5.5 |
| 33 | 2.8 | 1.1 | 2.5 | 2.2 | 8.1 |
| 34 | 0.9 | 0.4 | 3.7 | 3.3 | 3.2 |
| 35 | 1.6 | (-)0.1 | 3.5 | 3.2 | 5.5 |
| 36 | 2.4 | 1.6 | 3.5 | 3.1 | 4.2 |
| 37 | 2.4 | (-)1.6 | 3.7 | 3.4 | 7.1 |
| 38 | 1.3 | 2.4 | 3.4 | 3.7 | 1.2 |
| 97 | — | 1.1 | 3.3 | 4.3 | 2.8 |
| Total | 1.4 | (-)0.6 | 3.2 | 3.6 | 100.0 |

Source: ASI Summary Results for the Factory Sector, various issues.

TABLE 2: GROWTH RATES IN REGISTERED MANUFACTURING, 1979-80 TO 1988-89

| | Employment of Workers | Mandays Per Worker | Earnings Per Worker | Earnings Per Manday |
|----------------------------|-----------------------|--------------------|---------------------|---------------------|
| Intermediate goods | 0.5 * | 1.0 * | 2.6 * | 1.6 * |
| | (0.336) | (0.870) | (0.843) | (0.751) |
| Capital goods | (-)0.02 | 0.3 | 3.0 * | 2.7 * |
| | (0.0) | (0.134) | (0.900) | (0.965) |
| Consumer durable goods | 1.6 * | 0.7 | 2.7 * | 2.0 * |
| | (0.791) | (0.181) | (0.776) | (0.588) |
| Consumer non-durable goods | (-)1.6 * | 2.3 * | 3.0 * | 0.5 * |
| | (0.706) | (0.750) | (0.829) | (0.653) |
| Registered manufacturing | (-)0.5 * | 1.5 * | 3.2 * | 1.6 * |
| | (0.301) | (0.663) | (0.579) | (0.800) |

Notes: (1) * Indicates statistical significance of the estimated coefficient at 90 per cent confidence level and above.

(2) Employment growth rate for registered manufacturing is for the nine-year period since 1980-81 as the same for the period since 1979-80 is statistically significant at 80 per cent confidence level.

Source: ASI Summary Results of Factory Sector, various issues.

cent per annum) than the average for registered manufacturing (1.6 per cent per annum). If these findings are valid, then they not only question Ahluwalia's evidence of increase in the wage rate but also perhaps the postulated associations between the wage rate, capital-labour ratio and the decline in employment.

Though these findings seem interesting, they remain partial since earnings per manday is not the same as wage rate due to a possible intensification of the working day. We examine *Occupational Wage Surveys*⁹ (OWS) which take into account the distinction between the wage rate per worker per day (hereafter wage rate)¹⁰ and earnings per worker per day (hereafter earnings).¹¹ As these surveys have been conducted four times since 1958-59, using consistent definitions and methodology covering almost the entire registered manufacturing sector, they could be useful to discern the long-term movements in wages, disaggregated by industries. Our preliminary attempt, however, ignores the variation in wage rate and earnings on account of education, skill and experience, though considerable scope seems to exist to do a more detailed exercise. Moreover, the figures reported here are simple averages of the minimum and maximum wage rate/earnings reported in OWS.

Fourteen industries for which data are available for all the rounds since 1958-59 account for about 40 per cent of registered manufacturing employment. In seven industries—accounting for about a quarter of registered manufacturing employment in 1980-81—the compound growth of wage rate between 1958-59 and 1986-87 is lower than the corresponding per capita income growth of 1.3 per cent per annum (Table 3).¹² In one industry, namely, bicycle manufacturing, the wage rate has, in fact, declined by 7 per cent in 1986-87 compared to 1958-59. In the remaining industries, wage rates have grown in the range of 1.3 per cent (ship building) to 2.9 per cent per annum (electrical machinery). The tentative inference from these long-term trends is that while the wage rates across industries under consideration have not remained constant, increases in them do not appear to be disproportionately large compared to per capita income growth in the same period. This result, consistent with the foregoing evidence on the trends in earnings per manday in the 80s for registered manufacturing based on ASI data, seems to provide a basis to question Ahluwalia's and the World Bank's finding of a disproportionate increase in the wage rate.

It is, however, interesting to discover from the same table that between the Third and the Fourth Round of the OWS (between 1975-76 and 1986-87) in almost all the 17 industries for which data are available, earn-

ings increased much faster than the wage rate.¹³ While the increase in the wage rate is in the range of (-)0.1 per cent (iron and steel) to 5 per cent (prime movers) per annum, earnings has went up between 1.3 per cent (garments) and nearly 7.9 per cent (electrical machinery) per annum.¹⁴ If it is conceded that the definition of the wage rate (by Ahluwalia) and wages (by the World Bank) represent earnings per worker, then these diverging trends seem to suggest that much of the reported increase in the wage rate or wages noted by them, represents additional remuneration for workers' extra effort—which is likely to get reflected in higher labour productivity (Figure 10)—and perhaps not a substantial increase in the wage rate for the standard working day.

To recapitulate: wage rate according to the OWS and earnings per manday as per ASI data have not gone up disproportionately as has been suggested by the studies quoted earlier. The wage rate over a long period in half the number of industries for which data are available (OWS) and earnings per manday for registered manufacturing in general and consumer non-durable goods industries in particular in the 80s (ASI) has not kept pace with growth of per capita income. However, earnings per worker increased faster than per capita income in registered manufacturing as well as in consumer non-durable goods industries since workers have evidently worked a larger number of days. Although, analytically, more intensive work could also account for a part of the discernible growth in earnings per worker, we have no basis to test the proposition.¹⁵

II Strength of Organised Working Class

The increase in the wage rate that is presumed to have taken place is seen as an evidence of the growing rigidities in the labour market—namely, minimum wage

TABLE 4: CORRELATION COEFFICIENTS BETWEEN GROWTH RATES OF EMPLOYMENT, EARNINGS PER WORKER AND CAPITAL-LABOUR RATIO

| | Simple Correlation Coefficient between Growth Rates of | |
|--|--|-------------------------------------|
| | Earnings/ Worker and Capital-Labour Ratio | Capital-Labour Ratio and Employment |
| 1 Trend growth rate during 1973-74 and 1986-87 | 0.142 | (-) 0.362 * |
| 2 (i) Percentage change in sub-period I | 0.479 * | (-) 0.215 |
| (ii) Percentage change in sub-period II | 0.014 | 0.001 |
| 3 (i) Average of annual growth rates in sub-period I | 0.193 | (-) 0.108 |
| (ii) Average of annual growth rates in sub-period II | 0.436 * | 0.348 * |

Notes: (i) Sub-period I: 1973-74 and 1979-80; and sub-period II: 1980-81 and 1986-87.

(ii) Correlation coefficients are computed for growth rates across 42 three-digit industry groups.

(iii) * Refers to statistically significant at 90 per cent level and above.

Source: ASI Summary Results of Factory Sector, various issues.

TABLE 3: TRENDS IN WAGE RATE AND EARNINGS IN SELECTED MANUFACTURING INDUSTRIES

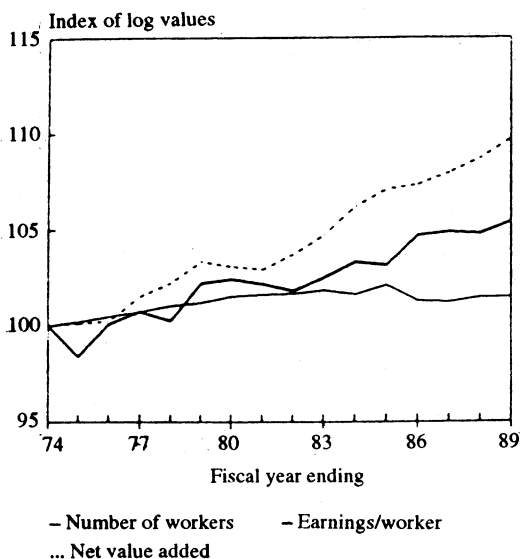
| Industry | Compound Growth Rate | | |
|------------------------|--------------------------------------|------------------------|----------|
| | Wage Rate between I and IV Round OWS | Between III and IV OWS | |
| | | Wage Rate | Earnings |
| Cotton textiles | 1.0 | 0.5 | 4.2 |
| Jute textiles | 1.8 | 2.0 | 2.4 |
| Woollen textiles | 0.7 | 1.6 | 4.3 |
| Silk textiles | 0.2 | 1.1 | 2.8 |
| Garments | 0.4 | 1.3 | 1.3 |
| Ship building | 1.5 | 1.5 | 7.4 |
| Locomotive | 2.0 | 3.4 | 3.8 |
| Motor vehicle | 0.7 | 2.6 | 6.4 |
| Bicycle | -0.3 | 0.2 | 2.3 |
| Aircraft | 1.8 | 0.3 | 5.0 |
| Iron and steel | | 0.3 | 2.7 |
| Casting and forging | | 2.7 | 5.9 |
| Agricultural machinery | 0.9 | 1.6 | 4.0 |
| Electrical machinery | 2.9 | 4.5 | 7.9 |
| Machine tools | 1.9 | 2.0 | 6.7 |
| Prime movers | | 5.0 | 7.6 |
| Textile machinery | 0.2 | 0.9 | 6.7 |

Notes: (i) I Round: 1958-59, II Round: 1963-66, III Round 1974-75, IV Round 1986-88.

(ii) Consumer price indices for industrial workers for all India are used. In order to reduce yearly fluctuations, we have used three-year averages around the year of survey to deflate the money wage rate and earnings.

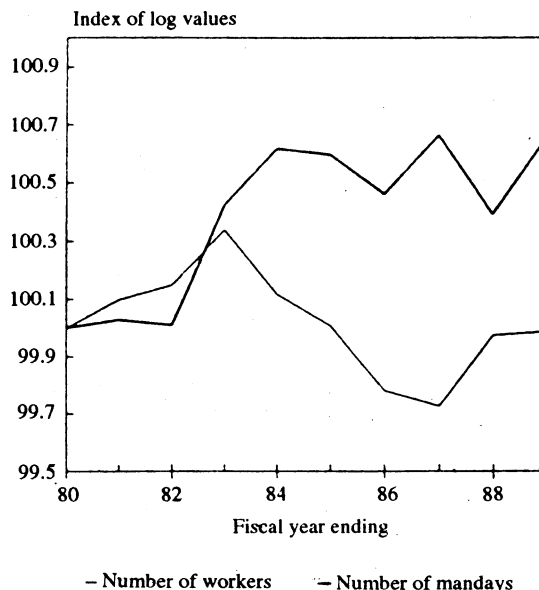
Source: Occupational Wage Survey, various reports.

FIGURE 1: TRENDS IN EMPLOYMENT, EARNINGS AND VALUE ADDED IN REGISTERED MANUFACTURING, 1973-74 TO 1988-89



Source: ASI Summary Results

FIGURE 2: NUMBER OF WORKERS EMPLOYED AND MANDAYS WORKED IN REGISTERED MANUFACTURING, 1979-80 TO 1988-89



Source: ASI Summary Results

legislation (growing) strength of trade unions and increasingly stringent job security laws—as reflected in the power of organised labour to appropriate a share of output disproportionate to their contribution, at the expense of additional employment generation and with a socially undesirable rise in capital intensity. Robert E B Lucas, for instance, showing an increase in the absolute number of mandays lost in industrial disputes in the organised sector as a whole, argued: “... it is clear that the comparative power of unions in pressing for wage settlements has grown substantially and the incidence of strikes has consequently risen as reflected in the number of mandays lost in strikes and lock-outs ...” [Lucas 1988: 189]; he reiterates this view in a more recent study as well [Fallon and Lucas 1993].

Lucas’ measure seems incorrect for three reasons. One, the absolute number of mandays lost in industrial disputes has little meaning when the number of mandays worked has also grown. Two, as industrial disputes could be due to either strikes or lock-outs—which he evidently recognises—an increase in the total number of mandays lost does not necessarily imply an increase in the proportion of strikes. Three, his data refer to the organised sector of the economy and not to the registered manufacturing industries which he has examined; the latter is a subset of the former.

Following Lucas in examining the trends in union power as a proxy for the alleged rigidities, our evidence questions his contention.¹⁶ In his measure of mandays lost in

disputes in registered manufacturing, when normalised for mandays worked, no statistically valid trend is discernible during the two decades beginning 1970-71. There are only fluctuations in the range of 0.7 per cent to about 2.3 per cent of the number of mandays worked (Figure 3). Union density—the proportion of workers unionised in registered manufacturing—fell from around 45 per cent in the late 70s to around 30 per cent towards the end of the 80s (Figure 4).¹⁷ The proportion of strikes in the total number of mandays lost in the disputes, ignoring the sharp dip during the ‘emergency’, has also steadily declined to less than half in the latter half of the 80s. This implies that in the recent years a greater share of industrial disputes has been on account of lock-outs by employers and not because of strikes (Figure 5).¹⁸ Finally, declining share of mandays lost due to strikes in the total is discernible in a period when the total number of workers involved in industrial disputes has dropped from 38 per cent in 1973-74 to less than 10 per cent in 1988-89 (Figure 6).¹⁹

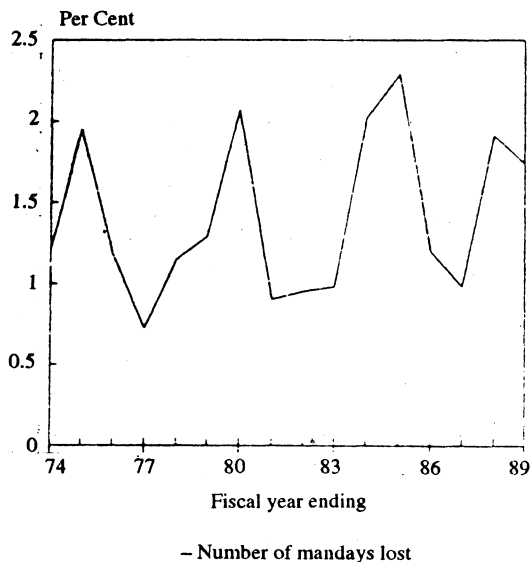
The decline in the strength of unionised labour is accompanied by changes in the structure of employment as well.²⁰ The share of registered sector in total manufacturing employment fell from around 30 per cent in 1977-78 to about 23 per cent a decade later (Figure 7). Moreover, within the factory sector, employment growth is positive in factories employing less than 1,000 workers; and a statistically significant negative correlation exists—with R^2 of 0.66—be-

tween the size class of factories and employment growth between 1979-80 and 1988-89 (Figure 8).²¹ Since the average wage rate is lower in smaller sized factories and the likelihood of power of unions is also lower, a priori one could argue that these structural changes would have further contributed towards reducing policy-induced rigidities in the labour markets and exerting downward pressure on wage rate and earnings within the registered manufacturing sector.

Arguably, these changes reflect the response of firms to the labour market rigidities. While there could be some validity in such a view, it would perhaps be incorrect to attribute the structural changes mainly or entirely to the behaviour of the labour market, as there could be a number of other reasons. These changes seem to form part of the long-term tendencies in the size structure of manufacturing to correct for the historical bias in favour of large sized plants in India [Nagaraj 1985]. This could also reflect the outcome of various policies to promote small-scale manufacturing and institutional changes in financing industrial development. Moreover, diffusion of skills, entrepreneurship and technologies could also have favoured modern small- and medium-scale firms.

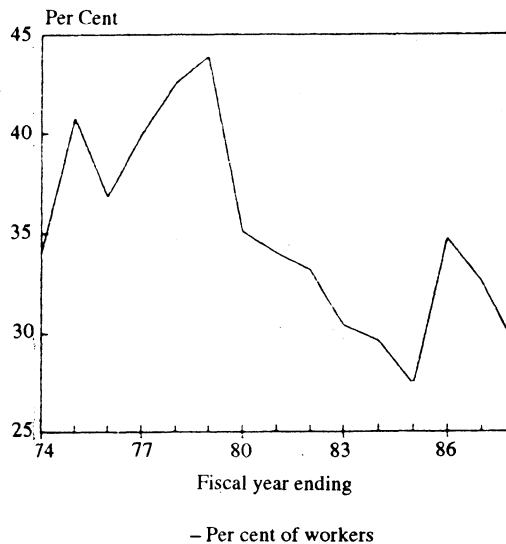
The foregoing evidence unambiguously shows a decline in the strength of the organised labour. Hence, it seems reasonable to suggest that, in a period of declining bargaining power of organised workers and structural changes in employment within registered sector towards smaller sized es-

FIGURE 3: NUMBER OF MANDAYS LOST IN INDUSTRY DISPUTES AS PER CENT OF NUMBER OF MANDAYS WORKED, 1973-74 TO 1988-89



Source: Indian Labour Yearbook, various issues

FIGURE 4: UNION DENSITY: PERCENTAGE OF WORKERS UNIONISED IN REGISTERED MANUFACTURING, 1973-74 TO 1987-88



Source: Indian Labour Yearbook, various issues

establishments, unionised labour is unlikely to have secured a disproportionate increase in the wage rate, especially at a time when the share of registered manufacturing employment in the total is itself declining.

While registered manufacturing accounted for about 30 per cent of total manufacturing employment in 1977-78, for consumer non-durable goods industries it was only about 24 per cent (Figure 7). Moreover, the average size of a factory in these industries declined from around 70 workers in 1973-74 to less than 55 workers per factory in 1988-89, as in registered manufacturing (Figure 9). Since employment in consumer non-durable goods industries is predominantly in the unregistered sector and since within the registered sector their average factory size has declined considerably, it is quite unlikely, contrary to what Ahluwalia has suggested, that organised workers in these industries could have succeeded in securing notable increases in the wage rate.

This is not to deny that organised workers do not command any bargaining power in the labour market. They perhaps do in large firms, in the public sector and in some locations. But at an aggregated level, the foregoing evidence seems to question the proposition of growing rigidities in non-agricultural labour markets.

III Testing the Hypothesis

The evidence adduced by Ahluwalia, the World Bank and Lucas on the postulated relationship between the wage rate, capi-

tal-labour ratio and employment seems to have an analytical shortcoming. They have shown trends in the wages/wage rate and the rigidities in the labour market without considering the changes in the cost of capital. Analytically, what matters in the choice of technique is not the wage rate *per se* but the wage-rental ratio. Perhaps these studies implicitly assume the cost of capital to have remained constant. Admittedly, its measurement is fraught with numerous conceptual and empirical problems. The simple and widely used measure is real interest rates, which increased steeply in the 80s, even ignoring the spikes in the series (Figure 11).²² Therefore there is a need to qualify the findings of Ahluwalia and others in this respect.

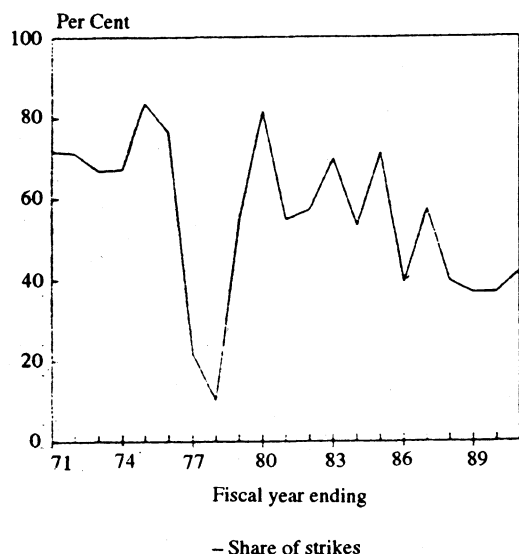
This section re-examines the postulated associations between increase in earnings per worker, increase in capital intensity (capital-labour ratio), and a decline in employment growth in registered manufacturing. The cost of capital is not included to minimise computational difficulties. Simple correlations across 42 three-digit industries for the period 1973-74 and 1986-87 are calculated between the growth rates of: (i) earnings per worker and capital intensity; and (ii) capital intensity and employment.²³ Three variants of associations are explored: (i) growth over the entire period of 14 years; (ii) increase in sub-period I (1973-74 and 1979-80) and in sub-period II (1980-81 and 1986-87); and (iii) average of the annual growth rates in sub-period I and average of annual growth rates in sub-

period II, thus obtaining five sets of correlations.²⁴

Evidence suggests that although the results are partially consistent with the hypothesis, in none of the variants does one find consistent and statistically significant results with the expected sign for the coefficients (Table 4). For instance, in variant I—that is over the entire period—while the correlation between the growth rates of capital-labour ratio and employment is statistically significant with the expected negative sign, the correlation between the growth rates of earnings per worker and the capital labour ratio is not statistically different from zero. Similarly, in variant III—that is, average of annual growth rates in sub-period II—while the correlation coefficient between the growth rates of earnings per worker and the capital-labour ratio is statistically significant with the expected negative sign, the correlation between the growth rates of capital-labour ratio and employment is positive and statistically significant, which is inconsistent with the hypothesis.

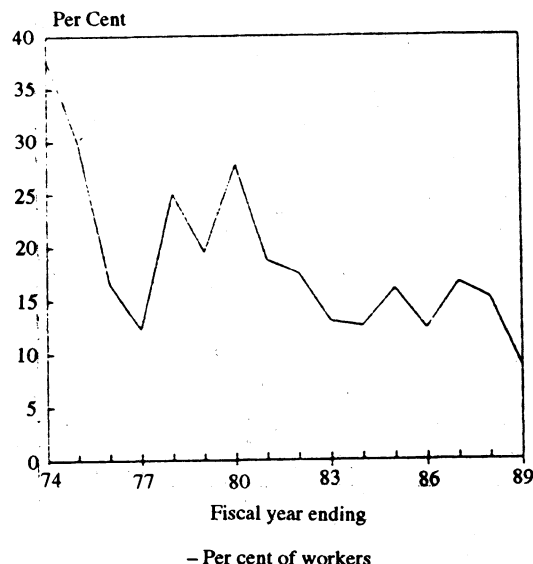
We have also computed the above-mentioned correlations separately for the time series data of 42 industries. To minimise autocorrelation problems the first differences in each series are correlated. The findings shows that in only nine out of 42 industries the postulated relationship is statistically valid with the expected sign for the estimated coefficients. These results, therefore, seem to suggest that the relationship between earnings per worker, capital intensity and employment is more complex than postulated by the hypothesis. Moreover, if

FIGURE 5: SHARE OF STRIKES IN TOTAL NUMBER MANDAYS LOST IN INDUSTRIES DISPUTES, 1970-71 TO 1988-89



— Source: Indian Labour Yearbook, various issues

FIGURE 6: PERCENTAGE OF WORKERS INVOLVED IN INDUSTRIES DISPUTES, 1973-74 TO 1988-89



Sources: Indian Labour Yearbook, ASI Summary Results, various issues.

we accept that real interest rate has gone up during the period it would further dilute the strength of the observed associations between the three variables.

IV Towards an Alternative Explanation

The causal connection between the wage rate, capital intensity and employment is, admittedly, an equilibrium condition. In a labour surplus dual economy, evolved under certain institutional conditions and witnessing an upturn in growth after a prolonged period of 'relative stagnation', the observed decline in employment could have multiple causes, not necessarily originating in the reported increase in wage rate.²⁵ In an attempt at exploring an alternative explanation, without offering an analytical model, we propose to identify a set of factors which could have influenced employment.

Changing Composition of Output: Part of the explanation for the decline in the 80s seems to lie in the changing composition of output in favour of less labour intensive industries. For instance, industry groups food products (20-21), rubber, plastic, petroleum and coal products (30), chemical and chemical products (31), non-metallic mineral products (32), and electrical machinery (36) witnessed above average growth in value added but have a below average share of wages in value added. The correlation between (i) growth rate in real gross value added and share of wages in gross

value added across 19 two-digit industry groups, for the period 1980-81 to 1988-89, is (-)0.51 and statistically significant. The relatively faster growth rate of these industries, especially chemical and petroleum-based industries perhaps reflects conscious efforts to import substitute these products in response to the oil price hikes in the 70s and the exploitation of newly discovered mineral oil deposits to reduce adverse effects of external economic shocks; and perhaps less driven by the evolution of relative prices.

Overhang of Employment: The upturn in output growth (and the corresponding negative growth rate in employment) in manufacturing in the 80s, as is well known, was witnessed after a prolonged period of relative stagnation since the mid-60s when employment growth was sustained at over 3 per cent per annum despite a deceleration in output growth, resulting in a narrowing of the gap between the growth of earnings per worker and labour productivity. More specifically, during the seven-year period since 1968-69 while net value added grew at 2.6 per cent per annum, employment kept growing at 3.9 per cent per annum; hence, labour productivity was increasing at a lower rate than earnings per worker, resulting in an unsustainable situation in the long run (Figure 10).

Intuitively, one could argue that when demand picked up in the 80s firms would have first used their existing stock of labour (as well as capital) intensively before deciding to employ additional workers. This could perhaps partly account for the lack of em-

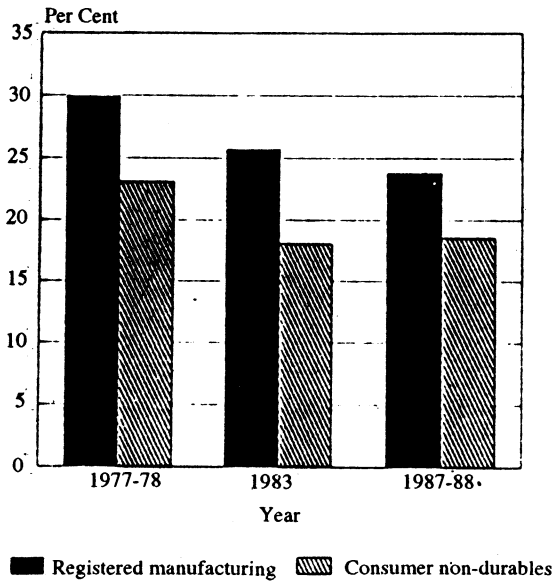
ployment growth in registered manufacturing, despite an upturn in output growth.

Changing Market Conditions: Analytically, changes in the product and financial markets are likely to affect the demand for labour. Studying the interdependence between market structure and technology, Desai (1985) suggested an increase in competition during the period 1963-64 to 1978-79.²⁶ Considering that liberalisation was initiated in the 80s one could hypothesise that industrial markets have become more competitive exerting firms to reduce costs. We, however, do not have any evidence to support the proposition.

In response to the public sector's growing borrowing requirement on the one hand and the policy directive of priority sector lending on the other, the cost of credit for the private (non-agricultural) sector seems to have increased significantly in the 80s. Figure 11 shows a steady increase in interest cost as a proportion of total income in medium and large public limited companies and the trend seems to be positively associated with an increase in the real interest rate in the 80s.²⁷

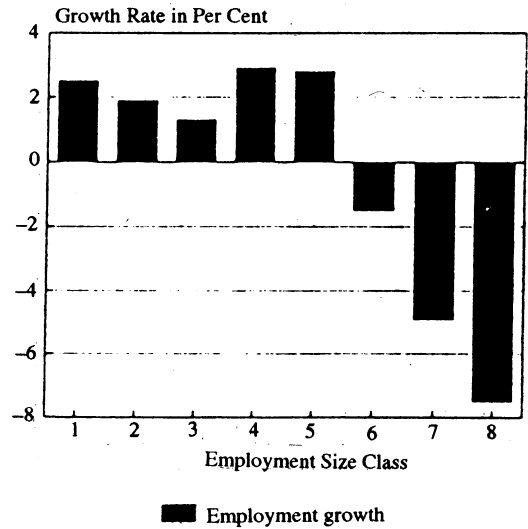
A priori, one would expect an increase in the cost of capital in a period of increasing competition to result in substitution of labour for capital and hence an increase in employment. However, given the differential wage-rental ratios in the registered and unregistered sectors, firms would perhaps have found it profitable to shift the production to unregistered sector adversely affecting employment in the former.

FIGURE 7: SHARE OF REGISTERED MANUFACTURING IN TOTAL MANUFACTURING EMPLOYMENT, 1977-78 TO 1987-88



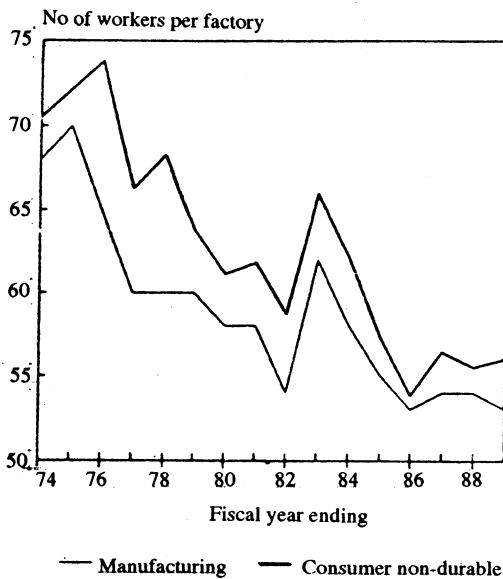
Sources: NSS, ASI various issues.

FIGURE 8: EMPLOYMENT GROWTH IN REGISTERED MANUFACTURING BY EMPLOYMENT SIZE CLASS, 1979-80 TO 1988-89



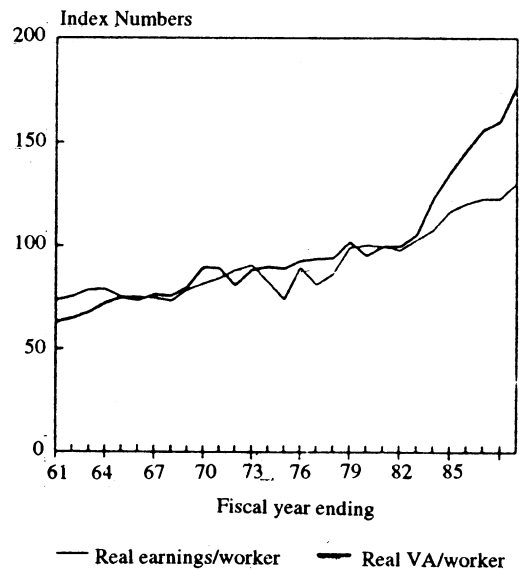
Employment size-class by number of workers: 1:0-49; 2:50-99; 3:100-199; 4:200-499; 5:500-999; 6:1000-1999; 7:2000-4999; 8:5000+

FIGURE 9: FACTORY SIZE IN REGISTERED MANUFACTURING INDUSTRIES, 1973-74 TO 1988-89



Source: ASI, Summary Results of Factory Sector, various issues.

FIGURE 10: EARNINGS AND LABOUR PRODUCTIVITY IN REGISTERED MANUFACTURING, 1960-61 TO 1988-89



Source: ASI Summary Results

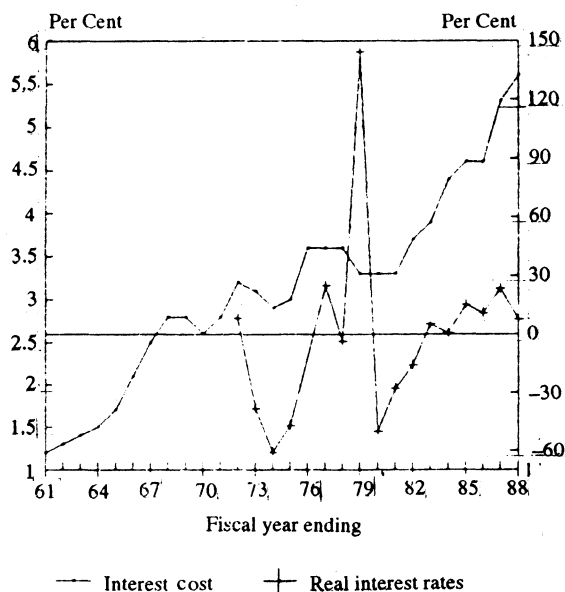
Modalities of Adjustment: Based on field experience [Nagaraj 1989], we would hypothesise the following plausible adjustment process. As demand picked up for manufacturing output, firms (i) used their work force intensively by increasing incentives for workers at the shop floor level, linking wage agreements to productivity norms, (ii) reorganised shop floor and workers' job-content, (iii) farmed out manufac-

turing of relatively simpler components and products to secure economies of specialisation and used contract labour for labour-intensive services, and (iv) increasingly employed part-time workers especially small firms. While capital investment and automation form elements of restructuring, these are more likely only after the other options are fully explored, unless dictated by technological consideration. However, the ad-

justment behaviour of public sector firms is likely to be more constrained by policy. These modalities of rationalisation of labour use in registered manufacturing were feasible in the 80s as a result of diffusion of skills, spread of infrastructure and various policies to promote small firms.

The foregoing explanation, however, would imply an increase in the growth rate of employment in the unregistered sector.

FIGURE 11: SHARE OF INTEREST COST IN COST OF PRODUCTION AND REAL INTEREST RATE, 1960-61 TO 1988-89



Sources: RBI Bulletin, National Accounts Statistics, various issues.

Since employment growth in unregistered manufacturing has also declined [Planning Commission 1990], one is inclined to further hypothesise that in the non-factory sector there is a much more intensive use of labour for longer hours and in a flexible manner. Moreover, there appears to be an increasing trend of workers taking up more than one job, especially among skilled workers, which could further restrict employment generation.

CONCLUSION

A reportedly sharp rise in the wage rate in the 80s in registered manufacturing—due to increasing policy-induced distortions in the labour market—is widely hypothesised to have led firms to substitute capital for labour, resulting in the observed decline in employment. Consciously avoiding getting into the theoretical debate on the causal relationship between the labour market and economic growth, this study provided evidence to suggest that the wage rate (using OWS) and earnings per manday (using ASI) did not increase disproportionately as has been argued. However, earnings per worker increased at a faster rate than per capita income growth mainly due to an increase in the number of mandays per worker. Our findings also suggest a distinct decline in the power of organised labour, used as a proxy for the reported rigidities in the labour market. Moreover, structural changes are discernible in employment in manufacturing industries in favour of the unregistered sec-

tor and within registered manufacturing towards smaller sized factories. These long-term tendencies would have further undermined the power of the organised working class to induce flexible use of labour. Finally, not much of a systematic relationship could be discerned in the postulated relationship between earnings per worker, the capital-labour ratio and employment at a disaggregated level.

Exploring an alternative explanation, it was argued that (i) mainly in response to the macro-economic compulsions of the 70s and the discovery of appropriate natural resources, the composition of output changed in favour of less labour intensive industries, (ii) there was an overhang of employment that had built up during the prolonged period of relative stagnation in the 70s, and, (iii) increasing competition in the product market due to domestic liberalisation and increase in the cost of borrowed funds could account for the decline in employment in registered manufacturing in the 80s. It was further hypothesised that there was (a) a restriction on fresh employment in large factories so as to use the existing work force more intensively, (b) shop-floor reorganisation and changes in workers' job-content, (c) contracting out of (mostly unskilled) labour-intensive services and farming out of production, and (iv) an increasing use of part-time workers in small firms permitting flexible use of labour.

Finally, if evidence and arguments outlined above have any validity, they seem to

suggest the limitation of the orthodox view in explaining the labour market behaviour and hence question the policy implications that follow from such a view.²⁸

Notes

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- 1 Unless otherwise stated, growth rates reported in this study are computed using log-linear trend equation.
- 2 Visaria and Minhas (1990) question the Planning Commission's findings since in three out of the four years in which the NSS data were collected happen to be 'bad' rainfall years and hence the employment in these years could have been affected adversely. However, such a problem is likely to be unimportant for manufacturing sector since: (i) output witnessed sustained growth with very little yearly fluctuation, and (ii) bad agricultural harvest is found to affect manufacturing output with one year lag.
- 3 Recently published official 'Discussion Paper' on economic reforms echoes the foregoing views: "... we must review and reform the current legislations for employment and industrial disputes to ensure that excessive rigidities are removed and long-term growth facilitated. The operation of the current Industrial Disputes Act (in particular, the requirement for prior approval by government for closure of sick units and retrenchment of labour) needs to be reviewed as it affects incentive for investment and as well as increased employment. ... Rigid rules limiting the flexibility with which labour can be hired and retrenched have the effect of pushing entrepreneurs into more capital-intensive technology and reduce the number of workers they have to deal with" [Government of India 1993: 34].
- 4 It is perhaps pertinent to cite South Korean example in this context. Despite strict laws prohibiting trade union activity, real wage rate in that country increased at a trend growth rate of 5 per cent per annum over a long period. Amsden (1990) attributes it to intensive learning, education and skill of the Korean workers.
- 5 "Wages are defined to include all remuneration capable of being expressed in monetary terms and also payable more or less regularly in each pay period to workers as compensation for work done during the accounting year. It includes (a) direct wages and salary (i.e. basic wages, salaries, payment of overtime, dearness compensatory, house rent and other allowances), (b) remu-

- neration for period not worked, (c) bonus and ex-gratia payment paid both at regular and less frequent intervals..." (ASI, 1988-89: Summary Results of Factory Sector, p 78).
- 6 For conceptual clarity, Maurice Dobb's distinction seems instructive in this context: "When we speak of a wage rate, we usually refer to the amount paid to the worker per hour per normal working day or for performing a certain job. In other words, we are speaking about what the worker receives in return for a given output of work on his part. ...When we talk about the standard of life of the worker and his family, we are concerned with the total earnings of the family-unit.... We cannot judge what is happening to the former [wage rate] solely from the figures about the latter [earnings]; and for a number of reasons these two quantities may change quite differently" [Dobb 1959: 27; emphasis added].
 - 7 Due to possible changes in the definition and methodology, data on mandays prior to 1979-80 are not comparable with the subsequent years.
 - 8 Census sector of ASI includes all factories employing 50 or more workers with power and 100 or more workers without power.
 - 9 Labour Bureau, Government of India in order to obtain "accurate and up-to-date wage statistics" [Indian Labour Year Book 1992:45] has periodically conducted Occupational Wage Surveys. The four rounds have been conducted so far in 1958-59, 1963-65, 1974-79 and 1985-88. The coverage has steadily increased over the successive rounds; from 44 plantation, mining and manufacturing industries in the first round to 53 in the fourth. These surveys include firms in the organised sector of these industries covered under the relevant acts. Complete results of the fourth round are awaited.
 - 10 To quote OWS: "Wage rate should include basic wage rate, cost of living allowance and other guaranteed and regularly paid allowances, but exclusive of overtime payment, bonuses, gratuities, family allowance and other social security payments made by employers."
"For the purpose of this survey, wage rate has been defined as the sum of basic wage and dearness allowance in respect of workers who receive both these components while for other workers the actual consolidated amount earnings represent their wage rate" [Occupational Wage Survey (Fourth Round), Report on Textile Industries (1986-87), Labour Bureau 1989: 46].
 - 11 "For the purpose of this survey, pay roll earnings have been defined as all those components of remuneration received by workers more or less on regular basis. Thus basic wage, DA, production and incentive bonus, attendance bonus, overtime allowance, shift allowance, cycle/transport allowance, washing allowance, etc. are included in the data on pay roll earnings. They also include money value of benefits/concessions accruing to workers on more or less regular basis". [Occupational Wage Survey (Fourth Round), Report on Textile Industries (1986-87), Labour Bureau 1989: 106].
 - 12 These are cotton textiles, woollen textiles, silk textiles, garments, bicycle, agricultural machinery and textile machinery.
 - 13 As the coverage has expanded in successive rounds of OWS, a comparison of more recent rounds enables one to include greater number of industries.
 - 14 The observed increases in wage rate and earnings perhaps get overstated due to a conceivable reduction in them during the emergency. A close perusal of the data confirms the suspicion.
 - 15 Robin Marris observed a similar variation between wage rate and earnings for the UK manufacturing industries in the 80s, by comparing the official earnings enquiry with employers' associations' statistical series on 'settlements' which relates to "agreed increases in basic rates for standard work under standard conditions" [Marris 1987: 48].
 - 16 Though these are official figures and are the only source to discern the long-term trends, their quality, according to some union analysts, leaves much to be desired. It is believed that trade unions often do not file returns on time, especially the smaller ones and firm-based independent unions.
 - 17 However, at a disaggregated level, trend decline in union density is statistically significant in only eight out of 18 major industry groups and in only one industry, namely, cotton textiles (NIC 23) the trend is positive and statistically significant. In the remaining cases, due to considerable yearly fluctuation in union membership, the trends are not statistically significant, though have the expected negative sign.
 - 18 Although this is a widely used, and is a valid simplification at an aggregate level, we are conscious that, at a micro-economic level lock out by management may well represent a pre-emptive measure to prevent a strike by workers or vice versa.
 - 19 Even this figure is perhaps an overestimate since it is not uncommon for workers to be members of more than one union.
 - 20 That registered manufacturing constitutes a small and declining proportion of the total manufacturing employment is not adequately appreciated by many. For instance, the World Bank (1989), unable to reconcile the employment figures from the ASI and the population census seems to infer that the latter are an overestimate.
 - 21 Information on employment by size class of factories is available only for factory sector. Since manufacturing accounts for over four-fifths of the factory employment, our finding is unlikely not incorrect.
 - 22 Though widely used, real interest rate as a measure of the cost of capital has many limitations, since it ignores tax rate and depreciation rules. We estimated trends in the cost of capital for the RBI's medium and large non-financial public limited companies using the equation: $(D/D + E) (1 - t) r + (d/d + E)$ (return on equity), where D is debt, E equity capital, t tax rate and r interest rate. A few variants were tried using different measures of return on equity. In all the cases the cost of capital is found to have increased on a trend basis since 1970-71. I am grateful to Subir Gokam for enlightening me a great deal on the analytical and empirical issues in computing cost of capital.
 - 23 In this exercise, the critical data are estimates of capital stock series, which we have taken from Aggarwal (1991). Since the 42 three-digit industries account for 72 to 75 per cent of net value added at current prices in the entire period, our exercise can be considered reasonably comprehensive.
 - 24 We computed averages for the years 1973-74/1974-75, 1978-79/1979-80 and 1985-86/1986-87 and the increments for each industry. These series were used for computing correlations, as mentioned in the text.
 - 25 Mazumdar (1989), for instance, is conscious of the complexity of the labour market behaviour in developing economies and seems to argue for a closer study of individual economies before arriving at simplistic generalisations.
 - 26 To quote Desai: "Many industrial markets in India are competitive and accommodate a large number of firms... Rather than a tendency for monopoly, the market structures display a tendency towards intense competition..." [Desai 1985: 168].
 - 27 Real interest rate is equal to $[(1 + \text{interest rate}) / (1 + \text{inflation rate})]$. We have used scheduled commercial banks' deposit rate for one year and above maturity and inflation rate is derived from implicit GDP deflator.
 - 28 Freeman's (1993a and 1993b) assessment of the evidence on the validity of the 'distortionists' and 'interventionists' views on the labour market, against the background of structural adjustment in a large number of developing countries, seems instructive:
In the 80s many economists came to view institutional interventions in the labour market as major impediments to growth and employment... Concerns were expressed that these and related interventions would prevent labour market adjustments necessary for stabilisation and structural adjustment.
For the subset of countries that have been studied intensely, the evidence dispels fears that government or union interventions invariably impede labour-market adjustments...
In short when you arrive in developia and find the economy a mess, don't look to government or union labour-market intervention as the prime cause of the trouble [Freeman 1993b: 404-05].

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