

DRD DISCUSSION PAPER

Report No. DRD287

THE EFFECTS OF LABOR REGULATION UPON INDUSTRIAL  
EMPLOYMENT IN INDIA

by

Peter R. Fallon

May 1987

Development Research Department  
Economics and Research Staff  
World Bank

The World Bank does not accept responsibility for the views expressed herein which are those of the author(s) and should not be attributed to the World Bank or to its affiliated organizations. The findings, interpretations, and conclusions are the results of research supported by the Bank; they do not necessarily represent official policy of the Bank. The designations employed, the presentation of material, and any maps used in this document are solely for the convenience of the reader and do not imply the expression of any opinion whatsoever on the part of the World Bank or its affiliates concerning the legal status of any country, territory, city, area, or of its authorities, or concerning the delimitations of its boundaries, or national affiliation.

# THE EFFECTS OF LABOR REGULATION UPON INDUSTRIAL EMPLOYMENT IN INDIA

## Abstract

This paper reviews the effects of legislation and government institutions upon labor costs and employment in the Indian manufacturing sector. It specifically examines wage determination, industrial relations legislation and current job security laws. Econometric analyses are provided of the determinants of the incidence of industrial disputes and the effects of job security regulation. Although wage intervention is found to be relatively unimportant in the manufacturing sector, it is argued that existing industrial relations legislation and job security laws have a positive effect upon industrial costs.

THE EFFECTS OF LABOR REGULATION UPON INDUSTRIAL EMPLOYMENT IN INDIA

by

Peter R. Fallon

Table of Contents

	Page
INTRODUCTION .....	1
1. Recurrent Employment Costs .....	4
(a) Minimum Wages .....	4
(b) Employment Cost Regulation in the Organized..... Sector	8
2. Industrial Relations Regulation .....	17
3. Job Security Regulation .....	24
Appendix .....	29
(a) Method .....	29
(b) Measurement of variables .....	31
(c) Estimation and results .....	32
Tables .....	34
Footnotes .....	42

## The Effects of Labor Regulation upon Industrial Employment in India

India has a long history of labor legislation stretching back to the 19th century. There are currently over one hundred and twenty seven statutes at both Central and State levels dealing with a whole range of labor issues, such as worker safety and welfare, industrial relations, contract labor and employment conditions in various industries. Although most of this has been introduced since Independence, there is little doubt that the underlying trend in such legislation has been one in which the authorities have created an increasingly protective environment for workers and hence an increasingly restrictive one for employers. In this respect the development of Indian legislation roughly parallels that of many other countries, both developed and underdeveloped. The motivation behind this trend is both clear and understandable. India was a poor country with a largely illiterate and unorganized labor force earning amongst the lowest wages in the world in often unpleasant working conditions. At Independence, trade unions were judged to be ineffective, while employers may have enjoyed oligopolistic status in many local labor markets. It is hardly surprising therefore, that given their perceptions of the situation, legislators would seek to redress the existing balance in favor of workers.

If protective labor legislation is successfully enforced, then its principal disadvantage is that it raises unit labor costs with potentially adverse implications for both employment in the affected sectors and for resource allocation in the economy as a whole. The aim of the present paper

is to assess both the effectiveness of a selection of regulatory instruments and their consequences. Inevitably there exists a range of legislative areas that are excluded. In particular, no attempt is made to review legislation regarding working conditions, safety and welfare, personal security, protection of children and bonded labor, on the normative grounds that such laws are an inevitable feature of almost all modern societies. Even here, however, in some cases there still remains the question of how to find the optimum balance between increased employment costs and perceived social benefit. The areas selected for analysis in the paper are: (i) wages and other components of recruitment employment cost, (ii) industrial relations, and (iii) job security laws. Although all three of the above obviously reflect social choices arising from the political process, it is arguable that there remains sufficient latitude in policy making to make the economic consequences of such policy decisions especially relevant.

The focus is on manufacturing industries, although it must be noted that most labor regulations apply also to enterprises outside of the manufacturing sector. Likewise, as regulations tend only to apply to establishments above a specified employment size, the analysis is directed more heavily towards larger establishments. However, comparisons are made with respect to smaller establishments where appropriate. Public sector employment policies are also omitted from the discussion, as the majority of workers in the manufacturing sector are employed in privately owned establishments.

Recent trends: - manufacturing employment

Employment in India may be broken for convenience into two categories: organized or formal sector employment which covers those employed in establishments with either ten or more workers with power or with twenty or more without power; and the unorganized sector which includes the self employed or those working in small, mostly household based establishments.

The 1981 Population Census found 25.1 million members of the labor force in manufacturing of which organized manufacturing employment (OME) accounted for 7.9<sup>1</sup> million or 31%. Other estimates<sup>2</sup> suggest that total manufacturing employment may have been closer to 35 million. There is therefore some uncertainty regarding the size of employment in the informal manufacturing sector with existing estimates varying between 17 and 27 million. Although informal manufacturing employment is much larger than OME, it is concentrated in rather few industries, namely: handlooms, khadi, handicrafts of various kinds, woodworking and metal-working. Much of organized manufacturing has therefore no direct competition in the product market from the informal sector, while the skills developed in those industries that do compete, are largely non-interchangeable between the two sectors. For example, handloom weaving requires very different labor skills from those used in tending powerlooms.

Within the organized sector as a whole, OME accounts for 26% of total employment. Between 1961 and 1984, organized manufacturing employment (OME) grew at an average annual rate of 2.5% and its share in total organized employment remained virtually constant. Rates of growth of OME have varied both over time and within different sub-sectors. Although the aggregate series is highly trended and shows, with the exception of a two year

stagnatory period between 1965/6 and 1967/8, a near constant growth rate of approximately 3% per year between 1959/60 and 1980/1, provisional estimates for the early 1980's suggest that the recent annual growth rate has fallen to 1.3%. The data on employment in two digit manufacturing industries presented in Table 1, show above average growth rates since the mid 1970's in textile products and the various chemical or mineral processing industries, and noticeably above average rates in cotton textiles, and in jute, kemp and mesta textiles. A more disaggregated breakdown gives a clearer picture, with above average growth rates in the newer capital goods (e.g. motor vehicles), industries, chemical derivative industries (e.g. oil products, plastics), and some food processing activities (e.g. dairy products and beverages), counter-balanced by low or negative growth rates in some of the older industries such as tea processing, tobacco products, cotton mills and railway equipment. Recent employment decline or stagnation in some of the older industries has been an important source of the slow-down in employment growth observed during the early 1980's.

1. Recurrent Employment Costs

(a) Minimum Wages

It is important to distinguish here between regulations or regulatory bodies that deal with various employment activities within the country as a whole or within individual states, and those that are only relevant to various parts of the organized sector. The main example of the former is the setting of minimum wage rates at both Central and State level under the provisions of the Minimum Wages Act (1948). The bulk of legislation and regulatory influences have applied exclusively, however to the organized sector.

Unlike many other countries, India does not have a set of universally applicable regional minimum wages as such, but rather a set of rates within each State and Union Territory which apply to only a differing number of selected industries within the area of each.

Although individual committees fix and revise minimum rates for each scheduled employment within a given State, an Advisory Board may be used to coordinate the work of these committees. The actual practice within individual States seems to be that identical or similar rates are set or revised in different industries within any given year. The dispersion of rates within each State arises, therefore, from non-concurrence in rate fixing and revision. Recently fixed or revised do, however, differ somewhat across States due to cost of living differences and differing policies. Originally the Act only sought to set minimum rates within thirteen defined industries (Scheduled Employments). Separate minimum rates could, however, be set for different occupations on a piece rate as well as on a time rate basis. Apart from agriculture, the Schedule was mostly made up of non-unionized or 'sweated' industries such as woollen carpet or shawl weaving; rice, flour or dahl mills, and tobacco manufacturing. Although the Act gave each government the power to refrain from setting minimum rates in scheduled employments with less than 1,000 workers within its territory, it also empowered each appropriate government to extend its application to additional employments and industries. By the end of 1973, the number of employments covered across all States, Union Territories and Central Government had risen to ninety-one. This exaggerates, however, the extension in the number of covered employments in given states: for example, in Andhra Pradesh minimum wage coverage had only been extended to twenty-six employments.

It is clear that at this time, minimum rates outside agriculture were rarely set at effective levels in the sense that prevailing rates were set at levels above those which would have prevailed in the absence of such intervention. For example, at the end of 1973, in only four out of fifteen states were minimum rates in the oil mills sector revised within the preceding two years. The pattern that one observes therefore, is that minimum rates were often allowed to fall in real terms. For example, in Andhra Pradesh the minimum rate in woollen carpet making or shawl weaving establishments was initially fixed at one rupee a day after the introduction of the Act in 1948. It was then only revised three times over a twenty four year period: to 1.5 rupees a day in 1960, to 2.0 rupees a day in 1968, and to 3.0 rupees a day in 1972. Although the real value of the minimum wage was 22% higher in 1972 as compared to 1948, the average real value of the minimum was 8% below its initial value in 1948 over the period as a whole. Similar conclusion are drawn if one looks at the experience in other scheduled employments and in other states.

This situation has changed somewhat in recent years. Following the inclusion of higher minimum rates as specific items in the two Twenty Point Programmes, there has been both an acceleration in the number of employments covered and a marked increase in the frequency of revision. At the end of September 1986, the number of covered employments had risen to two hundred and fifty of which forty-two were set by Central government. Rates must now be revised either within a two year period, or when the appropriate CPI rises by 50 points (Base: 1960 = 100). The exact formula used by Advisory Boards in determining minimum rates remains, however, a matter of individual policy. The enforcement of such rates is also debatable and there have been no

provisions for expanding the inspectorates with respect to industrial establishments, although specific rural inspectorates have been established in Madhya Pradesh, Manipur, Orissa and Rajasthan.

Although there can be little doubt that real minimum wages have risen considerably over the past ten years, (for example, in Delhi the typical real minimum has risen by 30% between the end of 1977 and September 1986), it is still questionable whether such rates have reached effective levels. There seems to have been few studies carried out in India regarding the effectiveness of minimum wages outside of agriculture. To shed some light on this, two small samples of establishments and firms operating in the textiles and light engineering industries were selected and visited. The first sample was drawn randomly from the register of establishments with less than fifty employees in the Delhi area, while the second consisted of twelve larger firms operating in one or more of Delhi, Bombay and Ahmedabad and in some cases also elsewhere. The main conclusions were that among small establishments, unskilled wages were generally equal to or above the minimum rate. Out of seventeen establishments surveyed, unskilled wage rates (i.e. basic plus dearness allowance) were equal to the prescribed Delhi minimum<sup>3</sup> in eight cases, were larger by ten percent or more in another eight, and were below the minimum in only one establishment which employed a significant number of women and children. In the larger establishments, unskilled wages were invariably well above the legal minimum and were sometimes more than twice that amount. The wage data are summarized in Table 2.

It is safe to conclude both from this and from other general information on collective bargaining agreements that in these two industries at least, unskilled wages were substantially above minimum rates in large

establishments. Since the unskilled rates paid were also above relevant skilled minimum rates, it follows that the latter are also ineffective. In smaller establishments one can only observe that most firms paid at or within 20% above the minimum rate. This would be consistent with the commonly held view that Advisory Boards use going wage rates in small establishments as the basis for setting minimum rates in the first place. One cannot, however, in the absence of comparable information on unorganized sector wages, reject totally the possibility that in Delhi at least, minimum rates have reached effective rates with respect to the lowest paid unskilled groups, i.e. women and children. Nevertheless, as small scale establishments account for only 15% of OME as a whole, it is clear that minimum wage legislation is currently unlikely to have much impact upon the organized manufacturing sector as a whole.

Potentially, minimum wages if moderately set may have a constructive role to play in India, insofar as they may counter monopsonistic influences in local labor markets and improve information regarding going wage rates. One existing obstacle to their performing these functions is that uniform rates are currently set across large geographical areas with wide differences in both costs of living and labor market conditions.

(b) Employment Cost Regulation in the Organized Sector

Employment costs can be broken into two parts: wages, i.e. payments either in cash or in kind paid directly on a regular basis to employees; and labor overhead costs. It is important to stress that the distinction between the two is sometimes a treacherous one as some non-wage elements such as employers' pension contributions are ultimately paid back to workers and

should therefore be included as part of the present value of worker incomes. It is convenient, however, to discuss each separately. Indian wages are not normally paid as a single consolidated rate. Usually there are four components: basic wage, overtime dearness allowance, and bonus. The Factories Act (1948) stipulates that overtime should be paid at double time rates but also restricts the amount of overtime that may be worked. Consequently, overtime is not an important feature of Indian manufacturing industry, although the existence of these regulations may impair firms' ability to respond quickly to unanticipated market opportunities. Dearness allowance (DA) is a feature of most collective agreements and is designed to partly neutralize cost of living changes over the period of the agreement. This is not in itself a subject of regulation in India, although this institutional feature of Indian wage bargaining is often disliked by employers as it tends to grow over time as a proportion of total remuneration and to therefore reduce the scope for productivity bargaining. Bonus is a statutory payment introduced in the Payment of Bonus Act (1965), and is currently distributed from a surplus calculated as profits less a series of stipulated deductions, subject to the provision that it should lie between eight and one third percent and 20% of non-bonus wage payments. Although the Act and its subsequent amendments may only have served to increase the proportion of bonus in total emoluments, rather than emoluments themselves, the complicated nature of the Act has been a significant source of industrial disputes. The wage setting process is essentially concerned with basic wages plus DA, although disputes regarding bonus may, of course, be a subject of the adjudication process. There have been over the last twenty years two types of regulatory influence upon wages in the organized manufacturing sector: the

recommendations of the Wage Boards and the activities of the Industrial Relations Machinery. The central argument put forward in this section is that neither has been a major force in the determination of wages in organized manufacturing.

The Wage Boards originated from dissatisfaction with the fragmented nature of collective bargaining in India. They are tripartite bodies appointed by the Central government which have the responsibility of recommending not only minimum wage rates in the industry concerned, but also the wage structure for specified categories of workers. The principles that supposedly governed the deliberations of Wage Boards, were those as set down by the Committee on Fair Wages (1949) which recommended that wages be set between a minimum wage and a 'living' wage. The former was a somewhat more generous concept than used in the Minimum Wages Act, while the latter was such that it should provide 'not merely for a bare physical subsistence but for the maintenance of health and decency, a measure of frugal comfort, and some insurance against the more important misfortunes'. It is hardly surprising that the Boards seem to have found this concept unworkable and have largely used the 'capacity to pay' of the industry in question as the main criterion. So far twenty four Wage Boards have been set up in nineteen industries, including nine in eight manufacturing industries, cotton textiles, sugar, cement (two boards), jute textiles, iron and steel, leather and leather goods, and heavy chemical and fertilizer. Board recommendations normally last for a period of five years but are not legally binding unless implemented. Although it seemed possible that the Wage Board system might be extended in the general direction of a National Wage policy, this idea has been rejected by the National Labour Conference, and the Wage Board system has been

virtually abandoned at the present time, with only the Sugar Wage Board continuing to function. It remains possible, however, that Wage Boards may have had a historical role to play in determining industrial wage differentials.

The Industrial Relations Machinery (IRM) was set up under the Industrial Dispute Act (1947) which provides for conciliation, arbitration and adjudication procedures to be followed by the relevant government. Disputes in air transport, railways, ports and docks, mines, posts and telecommunications, banking and insurance, and government factories fall under the central sphere. The remainder, which includes nearly all manufacturing, is the responsibility of individual State or Union Territory governments. Essentially the procedure is that if the conciliation process succeeds, then the agreement is binding upon all parties to the dispute. If it fails, then the Conciliation Officer must submit a 'failure of conciliation' report to the appropriate government. The government then decides whether the dispute should be referred to adjudication or not. The government must, however, refer the dispute for adjudication if the parties involved apply in the prescribed manner. In practice, adjudication is used in only a minor proportion of cases. Although 45,776 disputes were referred to the IRM in 1985,<sup>3</sup> only 13,024 failure reports were received and 11,960 were referred for adjudication. These figures are unlikely to be mutually consistent due to the length of the conciliation and referral processes and uneven reporting across the States. In the Central Sphere alone, 28% of disputes resulted in a failure report, while slightly over one half of the latter were referred for adjudication.

In 1982, wages, allowances and bonus were given as the prime cause of

disputes in 36% of reported cases. The IRM is therefore involved in a significant number of wage negotiations. It is unknown whether the conciliation process has any systematic effect upon the level of wage settlements, although a simple working hypothesis would be that on average, conciliation arrives more expeditiously upon the expected bargaining outcome. A more likely source of wage influence is the adjudication process and, in particular, the Industrial Tribunals.

Although there is little doubt that wages enjoyed by workers within the organized sector are significantly greater than those elsewhere,<sup>4</sup> it is also true that wages tend to grow with establishment size. The data presented in Table 3, show a very clear relationship between average wages per worker and average total emoluments per employee on the one hand, and establishment size on the other. A similar relationship was also observed earlier in Table 2. Although part of this observed variation is due to to systematically higher average skill levels in larger establishments, the evidence is that the positive relationship between wages and establishment size persists even after standardizing for education, training, knowledge of English, and occupation<sup>5</sup>.

Regulatory influences may well have played some role in establishing wage differentials between the organized and unorganized sectors, although it is known that in the Bombay area at least, factory wages were more than twice those in agriculture as far back as 1900 when trade unionism was in its infancy. Efficiency wage considerations present therefore an at least equally likely explanation. Wage Boards may have had a net wage raising effect<sup>6</sup> in their respective industries during the 1960's and 1970's, but it must be pointed out that Board recommendations were only implemented after trade union agitation. The implementation of Board awards may, however, shed some light

upon the tendency for wages to grow with establishment size, as industries such as cotton textiles and jute are disproportionately made up of large establishments. Industrial Tribunals are unlikely to be much of a source of either organized/unorganized or large/small differentials for two reasons. The first is that in roughly one half of all disputes, the Tribunals find for the employers rather than the workers, while the second is that large disputes rarely reach the Tribunals, as political pressures tend to ensure that they are settled out of court.

The main two facts about real consumption wage change over time in the organized sector are:

(i) Real hourly wages have grown at an average annual rate of 2.0% between 1959/60 and 1981/2. Real wages per employee have grown at around 1.5%. Growth, has, however, been rather erratic over time, revealing sharp temporary declines in real wages both in the mid 1960's and following the oil price shock of 1973. Real wages in agriculture appear, however, to have remained stationary over the same period.

(ii) Real wage growth has differed substantially between different industries. For example, real wages have grown rather slowly in tea processing and tobacco products, while rates of 5% or more per annum have been observed in plastics and motor vehicles.

Whatever the role of regulatory bodies may have been in creating and maintaining inter-sectoral wage differentials, it cannot be argued that their influence has tightened significantly in recent years. As noted above, the Wage Board system is now largely defunct, while there is no reason to suppose that Industrial Tribunals exert any stronger influence over wage settlements than previously. At least part of the divergence in real wage growth rates

between manufacturing and agriculture is likely to be due to a higher rate of skill accumulation in manufacturing and growing trade union power.

Employment costs also include statutorily imposed non-wage components. There are a number of pieces of legislation at both Central and State level, that have imposed such additional costs upon employers. The most important of these are:

- the Employees State Insurance Act (1948) which in factories employing 10 to 19 workers with power, and in factories employing 20 or more workers without power, as of January 1985 requires employers and employees to contribute 5% and 2 ½% respectively of 115% of wages (i.e. basic plus D. A.) payable, to an insurance fund which provides stipulated benefits in the event of sickness, maternity or employment injury. The Act now applies to workers earning up to 1600 rupees a month.

- the Employees' Provident Funds and Miscellaneous Provisions Act (1952) which, in factories employing 20 or more workers (with some minor qualifications) requires both workers and employers to contribute 6½% of wages; and in establishments employing 50 or more workers to contribute 8%, to the Employees' Provident Fund. This is effectively a compulsory pension scheme.

- the Payment of Gratuity Act, which in all establishments employing 10 workers or more, requires employers to pay a gratuity to an employee earning up to 1600 rupees a month on the termination of his employment after rendering continuous service for not less than five years. There are, however, provisions for reducing or withdrawing gratuity in the case of disciplinary dismissal.

It is fair to say that once the wage rate is determined, the above

legislation will fix recurrent employment cost as a fixed percentage markup. However, the total potential markup imposed on employers is only of the order of 20% of wages plus D.A. This figure is not particularly high by international standards, and in fact the corresponding average figure for organized manufacturing as a whole in 1977/8 was only 14%. It is also doubtful whether the net effect of such legislation raises employment costs by the stipulated percentages. Potentially, the contributions made by both employers and employees alike are ultimately payable to workers. They will only raise employment cost per worker, if workers fail to perceive the returns from such contributions, or if the stipulated proportions to be paid under the various Acts are distortionary, in the sense that workers would have voluntarily contributed less to such schemes if given full value of the contributions in cash income. To the extent then that the potential benefits generated from such expenditures are recognized and evaluated by workers, collective bargaining agreements will be more moderate in terms of wage settlements.

There remains the question of to what extent OME is sensitive to changes in wage rates. Short run estimates of the elasticity of labor demand as measured by hours worked with respect to the real product wage seem to vary between roughly -0.1 and -0.8.<sup>7</sup> It should be noted that in India, these estimates are likely to overstate the short run response of organized manufacturing to a regulated wage change, as firms may be able to pass part of a given nominal wage change on by raising product prices.<sup>8</sup> The effect of a regulated wage increase is to raise real consumption wages. However, as the products of the organized manufacturing sector form only a small part of the typical consumption bundle, firms can raise product prices with little effect

upon the consumer price level as a whole, thus causing the real product wage to increase by less than the real consumption wage. The ability of organized sector firms to behave in this fashion is obviously restricted by the price elasticity of demand for their products. In the extreme case where product demand is perfectly inelastic, the short run response will be to pass on all of a given nominal wage increase on to higher prices and to leave real product wages unchanged. One can speculate that this may approximate the case in the heavy goods and intermediate products industries. In the longer run, labor demand elasticities are likely to be higher as firms can adjust their non-labor inputs. This difference in labor demand elasticities is likely to vary from industry to industry, according to the extent to which the licensing system presents a constraint, and the elasticity of product demand varies across different industries. In the intermediate products and heavy goods industries, however, the long run elasticity of labor demand with respect to the nominal wage is still unlikely to exceed -0.3. It is only in the relatively labor intensive consumer product industries such as textiles and cosmetics where the potential for employment reducing effects is reasonably strong.

Considerations of this sort may also help to explain why Indian wages, although absolutely low by international standards, are relatively high relative to GNP per capita. Indian industry has historically been insulated from world trade by import controls and has a relatively well developed trade union system. Under such circumstances it would be possible for high wages to develop in the organized sector accompanied by high prices relative to those elsewhere in the economy.

## 2. Industrial Relations Regulation

A major area of debate in India is concerned with how the existing legal framework should be changed to improve the industrial relations system. There are two main aspects to this: the consequences of multi-unionism in individual establishments and the rather ponderous functioning of the industrial relations machinery.

There are no reliable figures on trade union membership in India. The statistics collected in the State Labour Departments and forwarded to the Labour Bureau have been seriously incomplete for a number of years. The combined verified membership of the ten major confederations was 6.07 million at the end of 1980, thus giving an overall unionisation rate in the organized sector of about 26%. This figure was almost certainly an underestimate, as verified membership is likely to be less than true membership (although the confederations' own combined estimate of over 10 million was equally likely to be a serious overestimate), and as the membership of firm or establishment specific unions without an affiliation to any confederation was excluded. In 1972, the last year for which information based upon returns from all States was reported, manufacturing accounted for 36% of total membership. As OME only accounts for a quarter of all organized sector employment, one can set a lower limit for the unionisation rate in manufacturing of 40%.

The main feature of collective bargaining in the manufacturing sector in India, is that it is usually conducted on a local firm or even establishment basis. Industry-wide bargaining is rare with the regional agreements in the textile industry providing an important exception. This piece-meal nature of collective bargaining in manufacturing is further compounded by the existence of rival unions within given establishments, which

may or may not be affiliated to a central confederation. The latter, are, by and large highly political organizations with strong links to existing political movements, and which often take little part in local and plant level union affairs.

The existence of rival unions within the same establishment has long been noted as a major obstacle to harmonious industrial relations. Such situations greatly raise the difficulties of achieving coherent collective bargains, and also tend to increase the frequency of industrial disputes. It is very apparent in India that establishments (usually of recent origin) with only a single union tend to enjoy much better industrial relations and suffer fewer industrial disputes, than do establishments in older industries which may contain as many as ten unions on the same premises. Unlike the situation in the U.K. in which multiple unionism is largely a relic of the days of the craft guilds, Indian multi-unionism derives from the existence of several trade union confederations with different political affiliations, and a tendency for politically motivated outsiders to form unions for their own purposes. The situation is clearly exacerbated by the current provisions of the Trade Union Act (1926) which sets a minimum membership of seven workers.

To explore the effects of multi-unionism upon the incidence of industrial disputes, a simple model was fitted to data from a 1977 cross-section of 142 industries. The model was estimated in a log-linear form with industrial disputes per establishment, and mandays lost per employee, used alternately as the dependent variable, and the unionization rate, trade unions per establishment, and average establishment size as the independent variables. The results are presented in Table 5.

The first equation suggests a strong positive relationship between the incidence of industrial disputes and both the extent of multi-unionism within an industry and its average plant size. This last variable is included under the presumption that large establishments are more likely to alienate workers while worker-management information channels may work less efficiently. The incidence of disputes seems, however, to be independent of the proportion of the workforce who are union members. The results indicate that doubling the number of unions in a given plant would lead to a 60% increase in the number of disputes.

Rather different results are obtained when (the logarithm of) mandays lost per worker is used as the dependent variable. There is a weak positive relationship with the unionsation rate, which is hardly surprising as the number of workers involved in any given dispute is likely to be greater the larger is union membership. There is a weaker positive relationship with the degree of multi-unionism, and a totally insignificant relationship with average plant size. The essential differences between the two explanatory variables are that mandays lost per worker takes additional account of both the number of workers involved in a dispute, and the average duration of disputes. Since the number of workers involved is inversely related to the degree of multi-unionism, it is expected that the elasticity of disputes per establishment with respect to multi-unionism will be greater than that of mandays lost per employee.

It is true, of course, that mandays lost is potentially a better measure of the costs of industrial disputes than the number of disputes per se. However, the method by which the mandays lost series is calculated, neglects the negative impact that a given dispute may have on other workers

who are not directly involved, except in cases where the entire establishment is shut down. If this latter effect were taken into account, then the otherwise automatically negative relationship between the number of workers involved in a dispute and the degree of multi-unionism would be weakened, and the positive relationship between mandays lost and multi-unionism would be stronger than that observed with existing data. In other words, industrial disputes per establishment may be little worse as a proxy for mandays lost than the existing measures of the latter. The results presented in Table 5 would thus seem to provide some statistical justification for the proposition that multi-unionism increases the costs incurred through industrial unrest.

The obvious direction that reform should take is very much that already suggested in places by the 1958 Indian Labour Conference, the 1978 Industrial Relations Bill and by the Sanat Mehta Committee Report of 1982.

The main points are:

- (i) Trade union recognition should be based on a minimum proportion of the establishment workforce.
- (ii) Bargaining should be conducted by a sole agent elected or approved by a majority of the workforce.
- (iii) The Industrial Relations Machinery should be reorganized or strengthened.

The exact recommendations made in the various reports. Only the 1978 Bill recommended changing the minimum membership as laid down under the 1926 Act, but all three concentrated upon the qualifications required by a given registered union to partake in the collective bargaining process. All three reports also endorsed the principle of the sole bargaining agent.

The salient points of each were:

1958 Labour Conference - 15% of an establishment's workforce to establish recognition. If there is more than one union then the largest would be representative. A union requires 25% of an industry's workforce to be representative for the industry. Once again, if there is more than one union with 25% or more then the largest would be representative. A non-ballot verification procedure was suggested as a means of ascertaining membership.

1978 Industrial Relations Bill - 10% minimum membership of an establishment subject to a minimum of ten employees as the requirement for registration, 65% is required to be the sole bargaining agent. A union with, for example, 51% would have to allow other unions with 20% or more in membership to be associated in bargaining. If there is only one union, then the agent will be a body directly elected from the workforce.

1982 Sanat Mehta Report - If there is more than one registered union in an establishment or industry, the union with the maximum support with not less than 40% membership in an establishment, and with 25% in an industry shall be the sole bargaining agent. New bodies, the Industrial Relations Commissions (IRC), would be set up at both Central and State levels. The relevant IRC would determine the minimum membership requirement if, in either a single or a multi-union situation, no individual union passed the requirements above. Membership would be decided by a check-off system in which a written authorization would be given by each employee to his employer designating the union concerned. The check-off would be confirmed by the IRC, and would be valid for three years. Craft unions are explicitly excluded. Voluntary arbitration is emphasized as the principal means of settling disputes when conventional collective bargaining has broken down.

All three reports are essentially moving in the same direction. It would appear tidier if the question of recognition were separated from that of representation and made, as in the 1978 Industrial Relations Bill, also the condition for registration. The 40% membership requirement in the Sanat Mehta Committee Report would, given the degree of multi-unionism currently prevailing in Indian industry, seem more realistic than the 65% proposed in the 1978 Bill. The question of ballots or check-offs versus independent membership verification is a rather tricky one. Ballots seem to appeal more to the unions themselves, but one must be concerned about the potential abuse of such a system. What must be avoided is a situation such as that which preceded the 1982/3 textile workers strike in Bombay, where alternative unions perceived it to be very difficult to replace the existing sole bargaining agent in the textile industry, (the RMSS), due to what they believed to be deliberate delays by both the employers and the authorities in verifying their support. The IRC would have to be both efficient and impartial on such matters to ensure that accusations of 'employer led' unions are avoided.

Some very partial indications of whether reform along these lines would have any success in reducing the amount of industrial unrest can be obtained by comparing the experience of Gujarat and Maharashtra with that of India as a whole. The Bombay<sup>10</sup> Industrial Relation Act (1947) (BIRA) lays down a qualifying requirement (5%) for recognition of a union within an establishment, a further qualification (15%) to be a primary union within the same establishment and a further requirement (25%) to be the representative union, i.e. sole bargaining agent, for an industry. A further category, the approved union, is guaranteed bargaining rights and other privileges in return for an agreement to submit all unsettled disputes to arbitration and to

generally refrain from striking unless all the provisions of BIRA are exhausted. The Act also provides for compulsory conciliation and adjudication of disputes.

Table 6 shows mandays lost per employee for the years 1976 to 1984 in the organized sector as a whole. The All India series shows clearly the upward jump in mandays lost that occurred after the Emergency in 1977, and considerable year to year variation in the series since. Gujarat has enjoyed a much better industrial relations record than India as a whole, while that of Maharashtra is marginally better except, of course, during the Bombay textile workers strike of 1982 and 1983. The Gujarat result is particularly striking as the unionisation rate in that state is virtually identical to that of India as a whole, while the much less convincing result for Maharashtra may, perhaps, be explained by the fact that the unionization rate there is 50% higher. A further fact to note, is that in 1972, the number of registered unions per thousand organized sector workers in India as a whole was 1.283, as compared to 1.14 and 0.63 in Maharashtra and Gujarat respectively. A plausible explanation may then be that BIRA has managed to restrict the growth of multi-unionism in Gujarat, but less so in Maharashtra. Obviously, however, other influences may also have been at work.

The recommendation of the Sanat Mehta Committee, that arbitration should be the chief means of resolving disputes, is also an interesting one. Although the conciliation procedures laid down under the Industrial Disputes Act (1947) result in failure reports only on a minority of occasions, it is clear that the adjudication process as conducted in Industrial Tribunals and Labour Courts is much too lengthy. On existing reported evidence, it appears to take as long as three years on average to take a case through an existing

tribunal. This partly reflects an inadequacy in the number of tribunals, but also indicates the ease with which the relevant parties can deliberately delay proceedings by failing to complete the required paperwork. Greater use of arbitration should ease the backlog of cases, while stricter time limits on the paper work could prove useful.

### 3. Job Security Regulation

The Industrial Disputes Act (1947) lays down the main conditions governing notice required prior to lay-off, retrenchment and closure, worker eligibility for compensation and the amount of compensation to be paid.

Essentially the retrenchment conditions are that a permanent worker is entitled to fifteen days compensation for each year of service and one month's notice must be given in writing, stating the reasons for retrenchment. Compensation for lay-off is at 50% of basic wages plus DA. Numerous exceptions are laid down in the Act, the most important being that casual, or badlis workers, and establishments with less than fifty workers are exempted, while lay-off compensation is not payable if there is a strike or go-slow. The most striking aspect of Indian job security legislation is, however contained in later amendments to the Act. The 1976 amendment makes lay-off, retrenchment and closure illegal in establishments employing 300 or more workers, except with the prior permission of the appropriate government. The 1982 amendment extended this provision to establishments with 100 or more workers, but both amendments were declared unconstitutional by the Supreme Court on the principle that the right to be in business also implied the right to get out of business. Specific criticisms regarding the lack of hearings and periods of notice were, however, remedied in a further amendment

of 1984. At the present time the latter amendment stands, although it is currently being tested in High Courts throughout the country.

Assuming that the amendments represent an increase in worker job security over and above that which would voluntarily be agreed in the context of enforceable job contracts on collective bargains, then their impact would depend upon their impact upon employment adjustment costs. Clearly, employers who safely anticipate rising or stationary employment over a long period are not likely to be affected. A more interesting case to consider is the employment strategy of a firm that faces a period of high or buoyant demand to be followed by a period of relative slump.

The first reaction of the employer will be to avoid the new laws in any of three ways: allowing his labor force to fall during the slump period via natural wastage; varying hours worked per employee rather than employment levels; and by using casual laborers during the upswing and then dismissing them during the downswing. Insofar as these tactics are limited in applicability, then the appropriate tactic would be to employ fewer workers and produce less during the upswing and vice-versa during the downswing. Industrial employment and production would thus become less responsive to temporary changes in market conditions and to the trade cycle. Other long term effects that will occur are: i) A switch to more capital intensive techniques within industries that forecast future downturns as serious possibilities; ii) A possible switch in the relative structure of production towards capital intensive industries and away from labor intensive industries; and (iii) greater impact of the legislation in areas of high unemployment as separation costs are likely to be higher.

Interviews with the managers of twelve establishments in the light engineering and textile industries revealed a number of facts regarding the current effects of the legislation.

(i) Employers face considerable difficulties in substituting temporary for permanent workers. Apart from the fact that skilled workers require some specific training within the firm, the use of temporaries can only take place with the consent of the trade unions. The use of contract labor is in principle limited by the Contract Labour Regulation and Abolition Act (1970) under which the use of such laborers is only legal if the work is not of a permanent nature. The major use of contract labor is in various forms of cleaning operations. These are jobs that the regular workforce dislike, sometimes because of caste attitudes, and there is little problem in obtaining union compliance. Contracting regular operations either inside or outside the establishment is, however, hotly opposed by trade unions. The use of badlis (substitute workers) - a traditional feature of old industries such as textiles and jute, is also regulated by collective agreement. Adjustment of hours worked and paid for is a more viable strategy and some textile mills have reduced their use of the third shift. Here again, however, there is inevitable union opposition. Adjustment may also be achieved through natural wastage. However, among larger firms annual voluntary separations are typically 3% or less, while collective agreements may specify explicit staffing levels thus obliging firms to replace those who leave.

(ii) The evidence is that applications to retrench workers or close plants is rarely, if ever, granted without union agreement. All firms but three had either experienced difficulties arising from the legislation, or anticipated difficulties in the relatively near future. The most notable

exception was a largely foreign owned firm producing light engineering equipment with a secure and steadily expanding export market. Another was a highly progressive firm with monopoly power in an expanding domestic market. The main tactic used to reduce the workforce of an existing establishment is to pay workers to quit. In a single union establishment this is easier to accomplish than in one with several unions. Essentially after consultation and negotiation, the union supplies the employer with a list of the names of those who are willing to leave voluntarily with compensation. The amount of compensation paid varies according to job prospects elsewhere and varies from the legal minimum of fifteen days pay for each year of service up to a year's pay or more as a lump sum. In one instance a multi-union firm failed to reach agreement with an offer of full pay until retirement age. This was a case, however, in which the workers in question would have had very little chance of obtaining a similar job elsewhere. It was generally agreed that it is more difficult and expensive to induce workers to quit in multi-union firms and in areas of high unemployment. Labor adjustment costs are thus a positive function of both the number of unions and the difficulty of finding a similar alternative job. Another tactic proposed by a light engineering firm was to assist existing workers in setting up their own business in producing intermediate inputs. The firm would then guarantee to purchase their output over a five year period. Although there is evidence that a similar approach is being adopted elsewhere in the engineering industry, its applicability to other industries is likely to be limited.

(iii) If marginal labor force adjustments are impossible, then the firm must either maintain loss-making enterprises or it must break the law. It is quite clear that firms are taking the latter course and that the

authorities are often hesitant about taking strong action. To close a plant illegally, the employer simply neglects to pay the power and/or water bills and removes the management. Subsequently legal action in the Industrial Tribunals can then be delayed as previously noted and further appeals can be lodged. This tactic is by no means a costless one, however, as fixed capital and land are tied up in the process while in the ultimate legal outcome, firms can expect to be made to compensate all affected workers (or at least those who have not melted away into the countryside) with full back pay. It seems that some firms are gambling upon the possibility that the existing law may soon be declared unconstitutional, in which case they will only have to compensate workers at the legal minimum.

The aggregate effects of the 1976 and subsequent amendments are difficult to identify. Separation rates by industry have generally declined over the 1970's although this may be due to a general movement away from the use of temporary workers. The analysis of structural shifts in the relationship between labor productivity and real product wages, as given in the Appendix, does suggest that in some industries at least adjustment has been less rapid since 1976. It also appears that given real product wages, labor productivity has tended to show an upward structural shifts since the Amendment was introduced.

There seems to be little doubt that the existing law is imposing serious adjustment costs especially in declining industries and those facing chronic demand fluctuations. Although there may be some short term employment preservation effects these are unlikely to be sustained in the longer run. If the government wants tougher job security laws, then it would be better to raise the legal rate of compensation rather than to retain the government permission clauses in the Industrial Disputes Act.

Appendix

The Estimation of Structural Shifts in Labor Productivity  
Associated with the 1976 Amendment to the Industrial Disputes Act

(a) Method

Assuming that the production function of a given industrial sector can be written as:

$$Q_t = A_t [\alpha Z_t^\theta + (1 - \alpha) L_t^\theta]^{1/\theta}, \quad (1)$$

where Q is real value added, A is a parameter varying through time, Z is an aggregate of non-labor inputs, L is labor input, t is time, and  $\alpha$  and  $\theta$  are parameters; then the corresponding marginal value product condition under profit maximization is

$$\log (Q/L)_t = c - \sigma \theta \log A_t + \sigma \log (w/p)_t \quad (2)$$

where the elasticity of substitution,  $\sigma$  equals  $1/1-\theta$ ;  $(w/p)_t$  is the real product wage, and c is a constant term. If one further supposes that adjustment to a given change in any one period is incomplete and that actual change in  $\log (Q/L)$  is a constant proportion,  $1-\lambda$ , of desired change, then

equation (2) becomes:

$$\begin{aligned} \log (Q/L)_t &= (1 - \lambda)c - (1 - \lambda)\sigma \theta \log A_t \\ &+ (1-\lambda) \sigma \log (W/P)_t + \lambda \log (Q/L)_{t-1} . \end{aligned} \quad (3)$$

Difficulty of adjustment is therefore measured by the size of  $\lambda$ . Thus, for example, in a perfect adjustment world,  $\lambda$  equals zero.

The effects of introduction of tougher job security laws can now be visualized in two ways:

(i)  $\lambda$  rises as adjustment becomes more difficult.

(ii) Expected non-wage labor costs per period increase as firms take into account the impact of the regulations upon the present value of future labor force adjustment costs. If the model above is modified so that  $W_t$  is replaced by total cost per worker per period,  $W'_t$ , where

$$W'_t = W_t(1 + m)$$

and  $m$  is a proportional markup of expected non-labor costs over the wage, then equation (3) becomes:

$$\begin{aligned} \log (Q/L)_t &= (1-\lambda)c + (1-\lambda)\sigma \log(1+m) \\ &\quad - (1-\lambda)\sigma Q \log A_t + (1-\lambda)\sigma \log (w/p)_t \\ &\quad + \lambda \log (\log (Q/L)_{t-1} . \end{aligned} \tag{3'}$$

The effect of new job security regulations should then be reflected in an increase in  $m$ , and therefore, in the constant term of equation 3', i.e. in  $[(1-\lambda)c + (1-\lambda)\sigma \log (1+m)]$ .

A dummy variable,  $D_{76}$ , was first calculated as equal to unity for the years 1976/7 forwards and zero otherwise. The insertion of the variables  $D_{76}$   $\log (Q/L)_{t-1}$  and  $D_{76}$  into equation 3', thus allows for the expected structural changes induced by the 1976 Amendment. The coefficients on both variables are expected to be positive.

(b) Measurement of variables

The original data source for all variables is the Annual Survey of Industries. The output measure is real value added, labor input is measured by manhours worked, and the real product wage variable is average hourly emoluments per employee divided by the value added deflator. The level of technology variable,  $A_t$  was proxied by the cumulative sum of past investment to capital stock ratios, as calculated for the previous period. The index for  $A_t$  is then calculated as  $\sum_{i=1}^{t-1} (I/K)_i$ . As the starting point of such a series is clearly arbitrary, it was set equal to zero for the first year.

(c) Estimation and results

The data were available for 36 industries over the period, 1959/60 to 1979/80. Data were not available for 1972/3. Obviously, given that only four post-legislation years were available for each industry, it was unlikely that the two different kinds of structural shift could be separated. This did indeed prove to be the case. Each type of shift is therefore examined separately in the results in Table A1.

For each industry, the results are presented in Table A1 for three estimating equations. The first examines whether the intercept shifts after 1976 in the absence of adjustment world difficulties; the second examines the same hypothesis given imperfect adjustment; while the third tests whether the adjustment coefficient rose in the absence of any intercept shift. Estimation was mostly by ordinary least squares, although Cochrane-Orcutt estimates are presented where serious first order autocorrelation appeared to be present. The third equation presented special estimation difficulties as an increase in the adjustment coefficient,  $\lambda$ , is theoretically associated with a corresponding decline in the values of all other estimated coefficients. Initial experimentation with appropriate non-linear estimation suggested a lack of robustness in the estimates, which is hardly surprising given the relatively small size of each sample. Two further procedures were then used. The first was to simply estimate the coefficient of the  $D_{76} \log (Q/L)_{t-1}$  dummy without any constraint upon the behavior of the other coefficients. These are in fact the results presented for the third equation in Table A1. A two step procedure was also developed as an alternative, in which equation (3') was first fitted to all observations prior to 1976, and the coefficients thus obtained were used to suitably transform the data for the entire sample

so as to allow the linear estimation of the shift in the adjustment coefficient. Although this procedure indicated the same directions of change in  $\lambda$  as the results in Table A1, some of the upward shifts were plausibly large and therefore are not presented here.

The presence of shifts in the intercept term is detected in the first two equations by the sign and significance of the coefficient on  $D_{76}$ . The shift in the adjustment coefficient is measured by the coefficient of  $D_{76} \log (Q/L)_{t-1}$  in the third equation. Of the nine industries examined, positive structural shifts from 1976/77 onwards are clearly present in cotton mills, paints & dyes and non-metal products. Cotton mills is especially interesting in this respect given the preponderance of large establishments in the industry. In no industry is there any significant evidence of negative structural shifts.

Table 1  
Average Daily Employment in Factories  
(000's)

	<u>1974</u>	<u>1983</u>	<u>Average Annual % Change</u>
Food Products	788	1062	3.4
Beverages, Tobacco and Tobacco Prod.	155	188	2.2
Cotton Textiles	1043	1159	1.2
Wool, Silk & Synthetic Fiber Textiles	142	201	3.9
Jute, Hemp and Mesta Textiles	278	277	0.0
Textile Products (excluding footwear)	84	152	6.8
Wood and Wood products	110	175	5.3
Paper & Paper Products, Printing, etc.	227	294	2.9
Leather and Leather Goods	44	69	5.1
Rubber, Plastic, Petroleum & Coal Prod.	128	195	4.8
Chemicals & Chemical Products	312	484	5.0
Non-Metallic Mineral Products	302	453	4.6
Basic Metal Alloys	375	570	4.8
Metal Products & Parts	203	274	3.4
Machinery, Machine Tools and Parts	415	517	2.5
Electrical Machinery	246	328	3.2
Transport Equipment	341	451	3.2
Other Manufacturing	<u>62</u>	<u>71</u>	<u>1.5</u>
<b>Total Manufacturing</b>	<u>5255</u>	<u>6920</u>	<u>3.1</u>

Sources: Indian Labour Statistics. Labour Bureau, Simla. 1978.  
Pocket Book of Labour Statistics, Labour Bureau, Simla. 1986.

Table 2

Percentage Breakdown of a Sample of Manufacturing Establishments by Ranges of Unskilled Monthly Wage Rate (Rupees)

		<u>400-420</u>	<u>421-500</u>	<u>500-1000</u>	<u>1000-1600</u>	<u>Number of</u>
		<u>estab.</u>				
Textiles	<50	17	33	50		6
-	>50				100	6
Light Engineering	<50	46	27	27		11
-	>50			17	83	6

Source: Sample of firms interviewed in Delhi, Bombay and Ahmedabad. October 1986.

Table 3

Average Annual Wage Per Worker (Rupees) and Emoluments  
Per Employee (Rupees) by Employment Size: 1981/2

	Wage Per Worker	Emoluments Per Employee
0-4	4446	6513
5-9	3735	4343
10-19	3876	4718
20-49	4016	4911
50-99	4174	5181
100-199	4753	5993
200-499	6276	8050
500-999	8037	10610
1000-1999	9567	11130
2000-4999	9590	10990
5000-above	10940	12550

Source: Annual Survey of Industries. 1981/2 Summary Results for Factory Sector. CSO. Dept of Statistics, Ministry of Planning, Government of India.

Table 4

Elasticities of Labor Demand with respect to  
Real Product Wages in Selected Manufacturing Sectors

---

	<u>Elasticity</u>
Dairy Products	- 0.75
Edible Oils	- 0.47
Tobacco	- 0.53
Cotton Textiles	- 0.53
Jute	- 0.49
Wood Products	- 0.72
Paper	- 0.75
Leather Products	- 0.20
Paints - Dyes	- 0.54
Soaps - Cosmetics	- 0.15
Misc. Chemicals	- 0.42
Non-metal Products	- 0.38
Steel	- 0.81
Metal Products	- 1.04
Cycles	- 0.17

---

Source: Lucas (1986) op cit.

Table 5

Some Determinants of Industrial Disputes per Establishment  
and Mandays Lost per Employee (Estimated Elasticities)

	Unionization Rate	No. Trade Unions per Establishment	Average Establishment Size
Industrial Disputes per establishment	- 0.023 (0.3)	0.602 (5.99)	0.248 (2.66)
Mandays lost per Employee	0.255 (1.59)	0.295 (1.43)	-0.120 (0.627)

Source: Data are taken from Indian Labour Statistics (various issues). The data for industrial disputes and mandays lost are from 1977. Due to incomplete trade union membership return for later years, 1972 data were used for the latter.

Notes: (1) t statistics are given in parentheses.  
(2) Industrial disputes include lockouts as well as strikes.

Table 6

Mandays Lost through Industries Disputes  
per Employee (1976-1984)

	<u>Gujarat</u>	<u>Maharashtra</u>	<u>India</u>
1976	0.04	0.21	0.67
1977	0.29	0.91	1.33
1978	-	-	1.36
1979	0.30	0.88	2.25
1980	0.51	0.91	0.98
1981	0.31	1.02	1.48
1982	0.40	11.41	3.25
1983	0.50	4.84	1.97
1984	0.52	1.96	2.34

Sources: Labour Bureau' Labour. Labour Bureau. Chandigarh/Simla 1984  
Pocket Book of Labour Statistics 1986. Labour Bureau. Chandigarh/Simla.  
1984 Indian Labour YearBook 1984.

Table A1

Estimated Coefficients of the Marginal Productivity Equation

Sector	$\log (w/p)_t$	$\sum_{i=1}^{t-1} (I/K)_i$	$\log(Q/L)_{t-1}$	$D_{76}$	$D_{76} \log (Q/L)_{t-1}$	D. W.	$R^2$
Edible Oils	0.13 (1.30)	0.13 (1.73)		0.10 (1.47)		2.01	0.65
	0.15 (1.39)	0.19 (2.58)	0.25 (0.80)	-0.00 (0.00)		1.84	0.77
	0.15 (1.38)	0.14 (2.30)	0.25 (0.40)		-0.02 1.38	1.84*	0.77
Cotton Mills	0.03 (0.48)	0.43 (12.82)		0.10 (5.40)		1.83	0.99
	-0.02 (0.23)	0.42 (3.84)	0.08 (0.42)	0.09 (3.89)		2.01	0.99
	-0.01 (0.08)	0.43 (3.86)	0.05 (.27)		0.04 (3.88)	1.99	0.99
Paints & Dyes	0.14 (1.19)	0.13 (2.60)		0.19 (4.53)		1.50	0.92
	0.16 (1.16)	0.05 (0.62)	0.43 (1.78)	0.11 (1.88)		2.45	0.94
	0.16 (1.16)	0.06 (0.65)	0.42 (1.68)		0.03 (1.87)	2.43	0.94
Miscellaneous Chemicals	0.66 (5.18)	0.07 (1.60)		0.05 (0.73)		1.87*	0.90
	0.68 (4.89)	0.01 (0.15)	0.09 (0.56)	0.07 (1.01)		2.71*	0.89
	0.63 (4.46)	0.07 (1.40)	0.11 (0.65)		-0.01 (0.54)	1.40	0.89
Metal Products	0.87 (12.89)	0.09 (2.73)		0.06 (1.58)		1.64*	0.97
	0.90 (10.41)	0.06 (0.79)	0.05 (0.47)	0.07 (1.33)		1.47*	0.97

	0.89 (11.66)	0.07 (1.97)	0.00 (0.05)	0.02 (1.89)	1.38	0.97
Non-metal	0.43 (5.00)	0.26 (6.82)		0.13 (5.82)	1.58	0.99
	0.40 (4.72)	0.20 (3.33)	0.17 (1.51)	0.11 (4.47)	1.85	0.99
	0.42 (4.68)	0.20 (3.36)	0.14 (1.18)	0.06 (4.52)	1.71	0.99
Pharmaceutical	0.72 (6.17)	0.01 (0.13)		0.11 (2.26)	2.26	0.98
	0.53 (3.24)	-0.04 (0.54)	0.40 (1.65)	0.28 (0.43)	2.54	0.98
	0.53 (3.24)	-0.04 (0.54)	0.40 (1.67)	-0.01 (0.42)	2.54	0.98
Soaps & Cosmetics	0.11 (1.50)	0.41 (8.82)	(0.63)	-0.04	2.01	0.97
	0.14 (1.54)	0.47 (2.83)	-0.14 (0.42)	0.06 (0.82)	1.79	0.97
	0.14 (1.54)	0.47 (2.85)	-0.14 (0.40)	-0.01 (-0.52)	1.80	0.97
Cycles	0.63 (7.03)	0.15 (2.62)		0.04 (1.17)	2.19	0.99
	0.47 (3.45)	0.05 (0.54)	0.35 (2.91)	0.05 (1.31)	2.35	0.99
	0.47 (3.35)	0.05 (0.59)	0.35 (2.87)	0.02 (1.21)	2.37	0.99

Notes: (1) † statistics are in parentheses.  
(2) \* estimation by Cochrane Orcutt.

Footnotes

1. Total persons engaged according to the Annual Survey of Industries. Factory Sector for both 1980/1 and 1981/2.
2. Planning Commission. Seventh Five Year Plan, Vol. II.
3. Annual Report of the Ministry of Labour, 1985-6.
4. Detailed evidence was presented in I. Little, D. Mazumdar, and J. Page. Small Manufacturing Enterprises: A Comparative Study of India and Other Countries. IBRD. January 1985. Chapter 14.
5. Little, Mazumdar and Page. (op. cit).
6. The operation of Wage Boards is surveyed in D. Lal. The Hindu Equilibrium, Vol. II: Aspects of Indian Labour. World Bank. August 1985, and in S. R. Rastogi. Wage Regulation in India, Popular Prakashan. 1977.
7. This range of estimates can be calculated from R. E. B. Lucas. Liberalization of Indian Trade and Industrial Controls. Boston University, January 1986. The estimating equations used assume capital stock to be predetermined by the industrial licensing system.
8. Given fixed technical coefficients and assuming labor to be the only variable factor, the elasticity of labor demand with respect to the nominal wage may be written as:

$$E_{LW} = E_{LW/P} / (1 + E_{LW/P} E_{QL} 1/\tau s)$$

Where  $E_{LW}$  is the elasticity of labor demand with respect to the nominal wage.  $E_{LW/P}$  is the elasticity of labor demand with respect to the wage deflated by the price of value added.  $E_{QL}$  is the output elasticity of labor.  $\tau$  is the price elasticity of product demand, and  $s$  is the ratio of the price of value added to that of gross output. Thus, for example, given an estimate of  $E_{LW/P}$  of -0.5, and assuming  $E_{QL} = 0.7$ ,  $\tau = -1$  and  $s = 0.5$ , we obtain  $E_{LW} = -0.29$ .

9. Report of the Committee Constituted to Examine Item 4 of the Agenda of the National Labour Conference (1982).
10. Bombay here refers to the old Bombay State and not Bombay City.
11. The data used were supplied by R. E. B. Lucas.

Some Recent DRD Discussion Papers

270. The Causal Role of Minimum Wages in Six Latin American Labor Markets, by M. Paldam and L. Riveros.
271. Tax Evasion, Corruption and Administration: Monitoring the People's Agents Under Symmetric Dishonesty, by A. Virmani.
272. Characteristics and Operation of Labor Markets in Argentina, by C.E. Sanchez.
273. Growth and Structural Change in East Africa: Domestic Policies, Agricultural Performance and World Bank Assistance, 1963-1986, Part I, by U. Lele and R. Meyers.
274. Growth and Structural Change in East Africa: Domestic Policies, Agricultural Performance and World Bank Assistance, 1963-196, Part II, by U. Lele and R. Meyers.
275. Abstracts of Development Research Department Publications: April 1986 - April 1987.
276. Korea's Macroeconomic Prospects and Major Policy Issues for the Next Decade, by V. Corbo and S.W. Nam.
277. The Pricing of Manufactured Goods During Trade Liberalization: Evidence from Chile, Israel, and Korea, by V. Corbo and P.D. McNelis.
278. Fiscal Policy and Development Strategy in Southern Asia, by G.F. Papanek.
279. Evolution of the Tunisian Labor Market, by C. Morrisson.
280. Labour Allocation Across Labour Markets Under Different Informational Schemes and the Costs and Benefits of Signalling, by O. Stark and E. Katz.
281. Mobility, Skill and Information, by O. Stark and E. Katz.
282. Labour Mobility and Intrafamilial Income Transfers: Theory and Evidence from Botswana, by O. Stark and R. Lucas.
283. Labour Migration, Income Inequality and Remittances: A Case Study of Mexico, by O. Stark, J.E. Taylor and S. Yitzhaki.
284. Female Labour Mobility, Skill Acquisition and Choice of Labour Markets: Theory and Evidence from the Philippines, by O. Stark and J. Lauby.
285. Market Structure, Jobs, and Productivity: Observations from Jamaica, by P.B. Doeringer.
286. Coordination of Taxes on Capital Income in Developing Countries, by P.B. Musgrave.