Labour Market Flexibility in Indian Manufacturing
An Empirical Inquiry of the Neo-liberal Propositions

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Abstract
There have been proposals to make the Indian Labour market further flexible, by amending the Industrial Dispute Act, 1947 and Contractual Labour Laws, 1970. But the Indian labour market has already achieved a substantial degree of flexibility through the contractualisation of factory workers. We have indexed these labour market flexibilities by the ratio between workers employed through contractors and total number of factory workers. This paper critically investigates the claims made in favour of introducing greater flexibility in the labour market. This is done through an empirical inquiry of the proposition, popular in neo-liberal policy circles, that casualisation of labour leads to higher output and employment growth. We found that there is no statistically significant dependence of employment and output growth on labour market flexibilities in Indian organized manufacturing sectors. Rather, it has helped to redistribute income away from the workers.

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Introduction

The recent lay-off in aviation industry has sparked off a debate on the need for greater labour market flexibilities in the Indian organized sector. Several Indian economists and policy makers have taken the view that distortions in the labour market on account of the extant labour laws in India are obstacles to higher economic growth and expansion of employment. The argument put forward by them posit “rigidities” in the labour market as disincentives to private investment as well as the adoption of labour-intensive technologies. Following the same line of argument the Second National Commission on Labour had called for greater labour market “flexibility”. The Prime Minister’s Office, in the year 2005, has prepared a note where the proposals for introducing greater labour market flexibility are categorically stated: Amendments to Chapter V.B of the Industrial Dispute Act (IDA), 1947 and the Contractual Labour Law, 1970. The attempt is to introduce two kinds of changes in the laws governing the labour market. Firstly, to give greater freedom to the employers to retrench or lay-off permanent workers by diluting the provisions under Chapter V.B of the IDA (i.e. to introduce hire and fire) and secondly, expanding the scope of employing contractual or casual labour in greater number of jobs as well as industries. These measures, it is argued, would impart the required “flexibility” to the Indian labour market, which would enable higher growth and employment generation, especially in the manufacturing sector.

Although, none of the above mentioned Acts have been amended to achieve the labour market flexibility, the enforcement of both the Acts, specially, the contractual labour laws have been poor. As a result, there is an increasing presence of temporary workers in regular work. This is actually providing a means through which the factory owners have reduced the scope of permanent employment. This tendency has not only liquidated the rigidities in labour market due to Contractual Labour Act, but also has liquidated partially the rigidities arising out of Industrial Dispute Act. So without changing these two Acts a substantial degree of labour market flexibility has already been achieved in Indian labour market. To capture the extent of these labour market flexibilities we have indexed it as the ratio between workers employed through contractors and total number of factory workers. The rising trend of contracting out the production process to the informal sector by the formal sector is another way of liquidating rigidities in labour market, which arises out of IDA, 1947. Though our labour market flexibility index does not capture this, the index reasonably indicates the current degree of labour market flexibility.

The purpose of the present paper is to critically investigate the claims made in favour of introducing greater flexibility in the labour market. This is done through an empirical inquiry
of the proposition, popular in neoliberal policy circles, that casualisation of labour leads to higher output and employment growth. The focus of the study is on the organized manufacturing sector in India. In Section I we discuss the debate over labour market flexibility in the international context. A brief overview of the Indian context is undertaken in Section II. Section III proceeds with our empirical analysis of the impact of greater labour market flexibility, measured in terms of greater casualisation of the workforce, on output and employment in Indian manufacturing industries. The findings are summarized in the concluding section.

I

The policy debate over labour market flexibility, although quite an old one, was triggered in the recent times by the Jobs Study of OECD (1994), which revived the orthodox classical argument while explaining the high unemployment rates witnessed in Europe since the 1980s. Holding “rigid” labour markets of Europe responsible for the incidence of high unemployment, the OECD Jobs Study recommended greater labour market flexibility in terms of (a) increasing the flexibility of working time, (b) making wage and labour costs more flexible by removing minimum wage regulations, (c) reforming employment security provisions, and (d) reforming unemployment and related benefit systems. The IMF World Economic Outlook (2003) said, “A wide range of analysts and international organizations—including the European Commission, the Organization for Economic Cooperation and Development (OECD), and the International Monetary Fund (IMF)—have argued that the cause of high unemployment can be found in labour market institutions. Accordingly, countries with high unemployment have been repeatedly urged to undertake comprehensive structural reforms to reduce “labour market rigidities” such as generous unemployment insurance schemes, high employment protection, such as high firing costs, high minimum wages, non-competitive wage-setting mechanisms and severe tax distortions.” It was also claimed in the same document that “… well-designed labour reform could produce output gains of about 5 per cent and a fall in the unemployment rate of about 3 percentage points.” The World Bank’s view on this has evolved over time. The World Development Report (1990) was of the view that “labour market policies—minimum wages, job security regulations and social security—are usually intended to raise welfare or reduce exploitation. But they actually work to raise the cost of labour in formal sector and reduce labor demand…and thus (depress) labor incomes where most of the poor found.” But a World Bank publication titled *Unions and Collective Bargaining: Economic Effects in a Global*
Environment (2003) notes that “workers who belong to trade union earn higher wages, work fewer hours, receive more training, and have longer job tenure on average, than their non-unionized counterparts… On the other hand, temporary lay-offs can be more frequent in unionized firms. At the macroeconomic level, high unionization rates lead to lower inequality of earnings and can improve economic performances (in the form of lower unemployment and inflation, higher productivity and speedier adjustment to shocks)”. The International Labour Organization (ILO) disagrees with the view that labour market rigidity has been the major cause of unemployment and greater labour market flexibility is the solution. ILO’s Jobs Report (1996-97) says, “jobless rates appear to have risen independently of levels of labour market regulations…trade union power was reduced in many countries, together with unemployment benefits and in some cases minimum wages, producing little if any positive employment effect.” Baker et. al. (2002, 2004) has noted that the findings of the time series models in the OECD Job Studies, that show labour market institutions adversely affecting aggregate outcome of the economy, are not robust. They have shown that some modest changes in the measure of institutions, countries covered or time period of analysis changes the finding of negative relationship between labour market rigidities and economic outcomes.

II

The Indian Constitution has listed labour as a subject in the Concurrent list whereby both the Central and State governments have the right to enact legislation, subject to certain matters being in the exclusive domain of the Central Government. There is a plethora of labour laws in India both at the Central as well as the State levels. An estimate puts the total number of Acts and rules concerning labour within the range of 25,000 to 30,000.\(^1\) Despite the plethora of laws, their efficacy remains questionable. The Second National Commission on Labour states, “It can be said that our labour laws have not flowed from any vision of a harmonious and just social order that takes into account the needs of an efficient and non-exploitative society, or a vision of the rights, duties and responsibilities of the different social partners to themselves, to each other, and to the totality of the community. They have been criticized as being ad hoc, complicated, mutually inconsistent, if not contradictory, lacking in uniformity of definitions and riddled with clauses that have become outdated and anachronistic, in view of the changes that have taken place after they were introduced many years ago.”\(^2\)

The note prepared by the Prime Minister’s Office in the year 2005, has proposed certain Amendments in two important Central Acts in order to make the labour market more flexible. It has been proposed that the present number filter of 100 under Chapter V.B of the Industrial
Dispute Act, 1947 be raised to 300. Presently the Chapter V.B of the IDA says that industrial establishment viz. factories, plantations and mines, employing not less than 100 workers have to seek prior permission from the appropriate government department to effect lay-off, retrenchment or closure. In their proposal to amend the Contract Labour Act, 1970 the PMO note has proposed that certain activities may be kept outside the purview of Section 10 of Chapter 3 of the Contract Labour (R&A) Act, 1970 which prohibits the use of contractual labour in industrial activities. The proposed activities where contract labour is sought to be allowed are: 1) sweeping, cleaning, dusting and gardening, 2) collection and disposal of garbage and waste, 3) security, water and ward, 4) maintenance and repair of plant, machinery and equipments, 5) housekeeping, laundry, canteen and courier, 6) loading and unloading, 7) information technology, 8) support services in respect of an establishment relating to ports /dockyards, airports, railway stations, inter-state bus terminals, hospitals, educational and training institutions, guesthouse, club and transport, 9) export oriented special economic zones and units exporting more than 75% or more of their production, and 10) construction and maintenance of buildings, roads and bridges. It has been further proposed that this list can be amended from time to time. In addition the Section 31 of Chapter 3, which provides discretionary power to the government to allow contract labour in case of emergency, is proposed to be amended to allow the government to use this discretion invoking public interest even without an emergency.

These proposals to amend the labour laws have been inspired by the works of economists who have argued strongly in favour of introducing greater labour market flexibility in India since long. Fallon and Lucas (1991), for instance, argued that employment growth in the organized segment of the manufacturing sector would have been higher by 17.5 per cent in the absence of rigid provisions on job security. Dutta Roy (1998), however, contradicted the finding and argued in a study based on ASI data for the period 1960–61 to 1993–94 that job security regulations (both the 1976 and 1982 amendments) have not been responsible for the slow-down in employment growth. Three primary survey based studies on labour flexibility in India by Sudha Deshpande et al (1998), Sharma and Sasikumar (1996) and Lalit Deshpande et al (2004) also have not been able to find any evidence that support the hypothesis that firms that have employees more than hundred face greater hurdles in laying off workers when compared to firms that employ less than hundred workers. An interesting and common finding of these studies is that firms, irrespective of size, were found to increase employment mainly by increasing the share of non-permanent workers. This shows that despite the existence of labour laws like the Contract Labour Act, contractualisation or
casualisation of labour has already occurred significantly, as far as the Indian labour market is concerned. In other words, manufacturing industries have already achieved substantial labour market flexibility through increase in the share of non-permanent workers in total employment.

**III**

In this section we shall discuss the impact of labour market flexibility, caused by increasing contractualisation of labour force, on output and employment for the organized manufacturing sector in India in the 1990s. Sunanda Sen et al (2006) have found using the ASI data that the ratio of non-permanent workers to total number of workers for most of the manufacturing sectors at the 3 digit level have gone up during the 1990s. Their data show that the proportion of contractual workers to total number of workers in all the sectors taken together (in other words, for organized manufacturing as a whole) has gone up from 9.89% in 1992–93 to 23% in 2000–01 (Graph 1). In our analysis, we try to study the impact of this increase in labour market flexibility that has already taken place on output and employment.

---- Graph 1 ----

Our analysis has used the data at 3 digit of NIC1998 sectoral level for the period of 1994-95 to 2003-04. The total number of sectors is 44. The total number of sectors at the 3 digit level of NIC1998 is slightly more. But to get a balanced panel we are limited in 44 sectors. The variables required for the analysis are output, net fixed capital stock, workers’ wage bill, total input cost, number of workers, number of workers employed through contractor and wholesale price index numbers (WPI).

For these variables, excluding net fixed capital stock and number of workers employed through contractor, we have used the Annual Survey of Industries (ASI) data provided by Economic and Political Weekly research foundation (EPWRF). This database has provided time series data of more than 25 years at the 3 digit sectoral level of NIC1998 classification. They have prepared these time series data, excluding WPI, by using ASI data of Central Statistical Organisation (CSO) and concordance table between NIC1998, NIC1987 and NIC1970. They have taken WPI series from CSO.

The variables, output wage bill of workers, total input cost, number of workers and number of workers employed through contractor, are same as that of value of output, wages to workers, total inputs, number of workers and number of workers employed through contractor respectively in ASI. To get the values at constant prices of 1993–94, we have used corresponding sectors’ Wholesale Price Index (WPI) series with base 1993-94=100. Instead
of consumers’ price index (CPI) number for industrial workers, the wage bill of workers is being deflated by WPI. It is because we are interested here to know the cost of labour to entrepreneurs. For the similar reason we have used WPI to get the value of total input costs at 1993-94 price.

This EPWRF database does not include data for the workers employed through contractors. We have taken this data from ASI of CSO and by using concordance table provided by EPWRF prepared the time series data for the 1995-96 to 2003-04.

The data series for stock of fixed capital has been constructed by using both ASI and National Accounts Statistics (NAS) database of CSO. ASI has provided data on net fixed capital stock at book value. Our analysis requires current net fixed capital stock, which is available for present production. The data series provided by NAS satisfies this definition of fixed capital stock. NAS has provided it at the aggregated level of organised manufacturing sector. Since ASI provides the data at 3 digit NIC level, following Chaudhuri (2002) by using perpetual inventory accumulation method, we have combined the ASI and NAS data to estimate net fixed capital stock at 1993–94 prices for the 3 digit NIC1998 level manufacturing sectors.

To trace the relation of the growth in labour market flexibility with output growth rate at 1993-94 prices and employment growth, the correlation coefficients are calculated. We found that both the values of the correlation coefficient are close to zero (Table 1). So, there is no linear relationship of growth of labour market flexibility with output growth and employment growth. The scatter diagram of growth in labour market flexibility and output growth shows no pattern of relation. This is true for the scatter diagram of growth in labour market flexibility and output growth also.

In order to further investigate the causal link between the variables we undertake a simple econometric exercise. We shall estimate two regression equations for the period 1996-97 to 2003-04. The equations are meant to (1) estimate the relationship between output growth rate and growth in labour market flexibility, (2) estimate the relationship between employment growth rate and growth in labour market flexibility. The dataset available to us for estimating these two models are balanced panel data. It consist 8 years’ data of 44 sectors. Since, it is a panel data, to begin with, we have assumed that the constant term of both the equations consists of both sector specific and time specific effect. And then we have done some statistical test to find the existence of sector and time specific effect.

Relation Between Output Growth and Labour Market Flexibility
Each sector is the aggregation of firms which produce that particular sectoral product. A firm’s (representative of a sector) decision to set a production target for the current year depends upon four factors—first, its expectation about the demand for its product in the current year, seconds, the production capacity, third the choice of technology and fourth, the variable cost of production.

We assume that firm’s expectation about the demand for its product in the current year depends upon its previous year’s experience. So output growth of the current year depends upon the output growth of the previous year. If the manufacturing economy as a whole is booming then it is most likely that the production target for current year will be upwardly revised from the previous year’s output. And during the slowing growth period of the manufacturing economy, most likely the opposite will happen. In the study, our period of econometric analysis is 1996-97 to 2003-04. The Indian manufacturing sector has experienced slowing down of growth in the substantial part of this period. Hence, it is most likely that the output growth of current year is negatively related with the output growth of the previous year.

The production capacity of a firm depends upon the capital stock it has. Since the gestation period of investment is generally one to two years, the output growth of the current year should depend upon the investment decisions of previous years. So we assume that the output growth of the current year depends upon the growth of capital stock of the previous year and of the year before the previous year. As increase in production capacity allows firms to increase the production, it is most likely that output growth is positively dependent upon growth in capital stock.

The choice of technology decides the combination of capital and labour that is to be used in the production. Technological change can alter the factors of production mix which in effect can change the output level. So, we can say that the output growth in the current year depends upon the technological change in the current year, which is measured as ratio between growth in capital stock in the current year and growth in workers employed in the current year.

Firm’s ability to increase output also depend upon its variable costs of production. The major components of the variable costs are labour, raw materials and energy. So we can say, firm’s output growth also depends upon the growth in wage bill per unit of output. This relationship is expected to be negative. The other major constituent of variable cost for the firm is the raw material, energy etc.. We have clubbed all of them together as input cost. The growth rate of input cost per unit of output should also negatively influence the growth rate of output.
Now the growth in labour market flexibilities should positively influence the output growth through its influence on greater encouragement on investment, influencing the technological choices and reducing the labour cost. The inclusion of the growth of labour market flexibilities along with the growth in capital stock, technological choice and labour cost as the factors to influence output growth may create multicollinearity problems. We have to test it statistically.

Following the above discussion more formally we can write the model as,

\[ \frac{1}{Y_{t-1}} (Y_t - Y_{t-1}) = \alpha + \beta_1 \frac{1}{Y_{t-2}} (Y_{t-1} - Y_{t-2}) + \beta_2 \frac{1}{K_{t-2}} (K_{t-1} - K_{t-2}) + \beta_3 \frac{1}{K_{t-3}} (K_{t-2} - K_{t-3}) + \frac{1}{K_{t-1}} \frac{(K_t - K_{t-1})}{(K_{t-1} - L_{t-1})} + \beta_5 \frac{1}{W_{t-1}} \frac{(W_t - W_{t-1})}{Y_{t-1}} + \beta_6 \frac{1}{\text{INP}_{t-1}} \frac{1}{Y_{t-1}} \frac{\text{INP}_t - \text{INP}_{t-1}}{Y_{t-1}} + \beta_7 \frac{1}{\text{CL}_{t-1}} \frac{1}{L_{t-1}} \frac{\text{CL}_t - \text{CL}_{t-1}}{L_{t-1}} + u_t \]

\[ \text{.................................(1)} \]

Where,

- \( Y_t \) is output of a particular sector at the \( t^{th} \) period.
- \( K_t \) is capital stock of a particular sector at the \( t^{th} \) period
- \( L_t \) is total workers of a particular sector at the \( t^{th} \) period
- \( W_t \) is total wage bill of workers of a particular sector at the \( t^{th} \) period
- \( \text{INP}_t \) is total input cost (It includes raw materials, energy etc.) of workers of a particular sector at the \( t^{th} \) period
- \( \text{CL}_t \) is total workers employed through contractor of a particular sector at the \( t^{th} \) period

The expression in the left hand side of the equation is output growth of a particular sector at the \( t^{th} \) period. The second term from the left in the right hand side of the equation is output growth of a particular sector with lag 1. The third and fourth term from the left in the right hand side of the equation are capital stock growths of a particular sector with lag 1 and lag 2. The fifth, sixth seventh and the eighth terms are technological change, growth in wage cost per unit of output, growth in total input cost per unit of output and growth in labour market flexibility respectively for a particular sector.

The expected sign of the \( \beta \) coefficients are \( \beta_1 < 0 \), \( \beta_2 > 0 \), \( \beta_3 > 0 \), \( \beta_4 > 0 \), \( \beta_5 < 0 \), \( \beta_6 < 0 \) and \( \beta_7 > 0 \).
We have estimated the correlation co-efficient among all the explanatory variables to test the multicollinearity problem. The values of correlation co-efficient are very low (Table 2). So there is no multicollinearity problem here. Though theoretically there is a possibility of multicollinearity between the growth in labour market flexibilities and the three other explanatory variables, growth in capital stock, technological change and growth in wage cost per unit output, the values of correlation co-efficient between them are substantially low for having any multicollinearity problem. Only the value of correlation co-efficient of growth in labour market flexibilities with growth in wage cost per unit output is statistically significant. The values of correlation co-efficient of growth in labour market flexibilities with growth in capital stock and technological change are not statistically significant.

Initially we have assumed that in this panel data series both sectors-specific and time specific effect exists. To capture the time specific effect, we have introduced seven dummy variables to separate out the effect of each year. To start with we have estimated the random effect model. We found that for the sector specific effect ‘u’ (By using Breusch and Pagan Lagrangian multiplier test for random effects)

\[ H_0: \text{Var}(u) = 0 \]

cannot be rejected even at 10 percent level of significance. So the pooled panel estimation may be more accurate model to estimate. Also we found that the hypothesis that the coefficients of the dummy variables are equal with zero cannot be rejected even at 10 percent level of significance. Even for the pooled panel model we cannot reject this hypothesis. So we have dropped the time specific dummy variables from the model. The estimation results are shown in Table 4.

The growth rate of wage cost per unit of output of the current year has statistically significant (at 5 per cent level) negative influence on the current year’s output growth. By averaging over time out of the 44 sectors, 36 sectors has negative average growth rate of cost per unit of output of the current year. And by averaging over the sectors, out of 8 years, in 6 years this growth rate is negative. So lowering of wage cost per unit output has helped the output to grow.

Growth rate of output of previous year has a statistically significant (at 5 per cent level) negative impact on output growth of the current year. Since, in the substantial portion of the period 1996-97 to 2003-04 Indian manufacturing industry has experienced downturn, it is expected that the producers has adjusted their output growth target for the current year lower from the previous year’s output growth. In fact, out of 44 sectors, in 30 sectors the previous
year’s output growth on average (averaged over time) are higher than the current year’s output growth. This finding also implies that during this period the Indian organized manufacturing has suffered from lack of demand. This has further reflected from the fact that, when all most all the sectors on average (over the time) have positive growth in capital stock, growth of capital stock with lag of one and two years has no statistically significant influence on output growth of the current period. This indicates the existence of excess capacity in the Indian organized manufacturing sector.\textsuperscript{4}

The technological change of the current year, which measures the extent of substitution of labour by capital, has also have statistically significant positive influence on output growth of the current year. But the value of coefficient of technological change is very small. Majority of the sectors, out of 44 sectors 26 have on average (average over time) has increased capital intensity. So the increasing capital intensity has resulted in output growth by a very narrow extent.

Lastly, we found that growth rate of labour market flexibility has no statistically significant influence on growth rate of output. It is expected that increasing labour market flexibilities should reduce the wage cost per unit of output. As growth of wage cost per unit of output negatively influence the output growth, the growth in labour market flexibility should have positive influence on the output growth. But the value of the coefficient (in the regression equation) of the growth of wage cost per unit of output is less than 1, around -0.58. So the impact of the growth in labour market flexibilities on output growth through the reduction in growth of wage cost per unit of output will be low. The increasing labour market flexibility should encourage in adopting more labour intensive technologies and growth in net fixed capital stock. But more capital-intensive technologies are being adopted. So most probably increasing labour market flexibilities has very little to do with the increasing capital-intensive technologies. And growth of net fixed capital stock has no statistically significant influence on output growth. So, we are not getting any statistically significant influence of growth rate of labour market flexibility on growth rate of output.

**Relationship between Employment Growth and Labour Market Flexibility**

It is assumed that employment growth in a sector depends upon the demand for labour by the firms of that sector. The demand for labour in the current year is positively dependent upon the firm’s target of production in the current year. So the employment growth in the current year should be positively dependent on output growth rate in the current year.

The demand for labour also depends upon the choice of technology. Choice of capital-intensive technologies will reduce the labour demand. So the technological change in the
current year, which is measured as ratio between growth in capital stock in the current year and growth in workers employed in the current year (Here, the underlying assumption is that there is no labour constraint for the Indian manufacturing sectors) should negatively influence the employment growth of the current year. Another factor to influence the demand for labour negatively is its cost. So the growth in wage rate of the current year should negatively influence the employment growth of the current year.

The growth in labour market flexibilities should positively influence the output growth, influence the technological choices towards the adoption of labour-intensive technologies and reduce the labour cost. All three should create a positive influence of growth in labour market flexibilities on employment growth. The inclusion of the growth of labour market flexibilities along with the change in technology choice and growth in wage rate as the factors to influence employment growth may create multicollinearity problems. We have to test it statistically.

Following the above discussion more formally we can write the model as

\[
\frac{1}{L_{t-1}} (L_t - L_{t-1}) = \alpha + \beta_1 \frac{1}{Y_{t-1}} (Y_t - Y_{t-1}) + \beta_2 \frac{K_t - K_{t-1}}{L_t - L_{t-1}} + \beta_3 \frac{1}{L_{t-1}} \frac{W_t - W_{t-1}}{L_t - L_{t-1}} + \beta_4 \frac{1}{L_{t-1}} \frac{CL_t - CL_{t-1}}{L_t - L_{t-1}} + u_t
\]

(2)

The expected sign of the \( \beta \) coefficients are \( \beta_1 > 0 \), \( \beta_2 < 0 \), \( \beta_3 < 0 \), \( \beta_4 > 0 \).

The values of correlation co-efficient among the explanatory variables are very low (Table 3). So there is no multicollinearity problem here. Though theoretically there is a possibility of multicollinearity between the growth in labour market flexibilities and the two other explanatory variables, technological change and growth in wage rate, the values of correlation co-efficient between them are substantially low for having any multicollinearity problem.

| Table 3 |

To identify the more accurate regression model for this equation we have followed the same procedure of the previous equation. i.e., to begin with, we have assumed that this panel data series have both sectors-specific and time specific effect. To capture the time specific effect, seven dummy variables are introduced to separate out the effect of each year. To start with
we have estimated the random effect model. We found that for the sector specific effect ‘u’ (By using Breusch and Pagan Lagrangian multiplier test for random effects) H₀: Var (u) = 0 cannot be rejected even at 10 percent level of significance. So the pooled panel estimation may be more accurate model to estimate. Also we found that the hypothesis that the coefficients of the dummy variables are equal with zero cannot be rejected even at 10 percent level of significance. Even for the pooled panel model we cannot reject this hypothesis. So we have dropped the time specific dummy variables from the model. The estimation results are reported in Table 5.

Table 5
Growth rate of output has statistically significant (at 5 percent level of significance) positive influence on employment growth. The growth of wage rate also has statistically significant (at 5 percent level of significance) negative influence on employment growth. It appears that growth rate of employment is more sensitive to growth in wage rate than growth in output. Technological change does not have any statistically significant influence on employment growth. As we have mentioned that use of technologies are becoming more capital-intensive, the technological change should have negative impact upon employment growth. But this technological change has a positive impact on output growth and output growth is having a positive influence on employment growth. So, technological change is having both positive and negative impact on employment growth. As a result, we don’t have any statistically significant sign of the co-efficient for technological change in the estimated equation. Lastly, the growth in labour market flexibility does not have any statistically significant influence on employment growth

Conclusion
From the regression analysis that we have undertaken, we conclude that increasing labour market flexibility defined as an increase in the proportion of non-permanent/casual workers in total workers has no positive impact on output and employment growth. The neo-liberal proposition that an increase in labour flexibility would lead to greater output growth and labour absorption does not seem to be valid as far as Indian manufacturing industries are concerned. Therefore, the ground for the amendment to the Contract Labour Act,1970 and IDA, 1947, which are being proposed in order to facilitate greater labour market flexibilities, appears quite slippery.
It will be rather interesting to see what the other consequences of this labour market flexibility are. If we start looking from mid-80s onwards, the Indian organized manufacturing has witnessed a monotonically increasing trend in capital-labour ratio\(^5\) (Graph 2). The growth rate of the ratio is lowest in the second half of 80s. In first half of 90s, the growth was higher and thereafter, till the year 2001-02, it was highest. Then it has declined marginally. This indicates that the manufacturing companies are increasingly adopting capital-intensive technologies.

Graph 2

The capital-output ratio\(^6\) measured at 1993-94 prices shows a different trend (Graph 3). It has a very marginal upward trend and actually dominated by cyclical fluctuation of a narrow 5 per cent band spread in either side of the average trend. Now, if capital intensive technologies are being adopted to replace labour, which is difficult to retrench due to labour market rigidities, then there should have been a monotonic increasing trend in capital-output ratio. This is not the case with the Indian manufacturing sector in 90s. Rather, it seems capital-intensive technologies are being adopted to produce commodities for two reasons—first, the cost of capital has been reduced substantially for large companies due to financial market liberalization\(^7\) and second, the demand pattern for Indian industries has changed as even the domestic demand pattern is becoming similar to the global demand pattern under this globalised era. And this global pattern of demand is highly tilted towards capital-intensive products\(^8\).

Graph 3

With the exception of the few years of mid-90s the total number of workers employed are more or less stagnant throughout the whole period of the year 1986-87 to the year 2003-04. Whereas, the actual manufacturing output at constant prices of 1993–94 has a monotonically increasing trend with the exception of the year 1998–99 (Graph 4). The average wage rate\(^9\) at 1982–83 prices has fluctuated within the narrow band of 15 to 20 per cent of the average wage rate. In the mid-90s the average wage rate was highest. And, in late 90s and thereafter, it is lower than the late 80s and early 90s (Graph 5). Lastly, the share of wages in net value addition has steadily declined from a little more than 30 per cent in the year 1986–87 to 15 per cent in the year 2003–04. The decline is at a much faster rate in last three years. On the other hand, the profit share in net value addition has increased from 18 per cent in the year 1986–87 to 45 per cent in the year 2003–04. Here also we have seen a marked jump in the increase of the profit share from mid-90s onwards (Graph 6).
All these trends together indicate that even if there is a substantial growth in manufacturing output, workers are not benefiting. The capitalist class is reaping the whole benefits of the output growth. This is being done through the combination of adopting capital-intensive technologies and greater labour market flexibilities. Therefore, greater labour market flexibilities have no influence on output, employment growth, apart from making a redistribution of income in favour of capitalist class.

During the period of the substantial positive growth of the manufacturing sector, if this is the situation, as stated in the above paragraph, then it is obvious that during the recession period a substantial portion of adjustment burden of the production process will be shifted to the workers. The recent lay off in the aviation industry is just this. In the mainstream economic theory, capitalists earn profit in return of taking risk of business. The Indian capitalist class, in this process of taking risk in business, wants to grab the profit of the good time but don’t want take the burden of adjustment in the business, when it goes through bad time. They want to shift the burden of adjustment towards the workers.

**Graph1**

**Contractualisation of Labour**

![Graph showing contractualisation of labour over years](source: Sunanda Sen 2006)
Graph 2

**Net Fixed Capital Stock-Labour Ratio (Rs/worker) (at 1993-94 prices)**

Source: National Accounts Statistics of various years for net fixed capital stock.
Annual Survey of Industries for workers.

Graph 3

**Net Fixed Capital Stock-Output Ratio  (at 1993-94 prices)**

Source: National Accounts Statistics of various years for net fixed capital stock.
Annual Survey of Industries for output
RBI Handbook of Indian Economy for WPI of manufacturing sector
Graph 4

Output (at 1993-94 prices) and Workers Trends

Source: Annual Survey of Industries for output and workers.
        RBI Handbook of Indian Economy for WPI of manufacturing sector

Graph 5

Average Wage Rate (Rs per worker) at 1982-83 prices

Source: Annual Survey of Industries for wage bill and workers.
        RBI Handbook of Indian Economy for CPI of Industrial worker
Graph 6

Source: Annual Survey of Industries for wage bill, profit and net value addition

**Table 1**
Correlation Coefficient of Labour Market Flexibility with Employment Growth and Output Growth

<table>
<thead>
<tr>
<th></th>
<th>Employment Growth Rate</th>
<th>Output Growth Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Growth in Labour Market Flexibility</td>
<td>-0.0738 (0.1671)</td>
<td>0.1087 (0.0415)</td>
</tr>
</tbody>
</table>

*Note: values in parenthesis give the level of significance*

**Table 2**
Correlation Coefficient of Explanatory variables in Regression Equation 1

<table>
<thead>
<tr>
<th></th>
<th>Output Growth Rate Lag1</th>
<th>NFCS Growth Rate Lag1</th>
<th>NFCS Growth Rate Lag2</th>
<th>Technological change</th>
<th>Wage Cost per unit Output Growth Rate</th>
<th>Total Input Cost per unit Output Growth Rate</th>
<th>Labour Market Flexibility Growth Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Output Growth Rate Lag1</td>
<td>1.0000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NFCS_Growth_Rate_Lag1</td>
<td>0.2058 (0.0001)</td>
<td>1.0000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NFCS_Growth_Rate_Lag2</td>
<td>0.0004 (0.9944)</td>
<td>0.0509 (0.3414)</td>
<td>1.0000</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Technological change</td>
<td>0.0077 (0.8849)</td>
<td>0.0595 (0.2653)</td>
<td>0.0305 (0.5686)</td>
<td>1.0000</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wage_Cost_per_unit_Output_Growth_Rate</td>
<td>0.2502 (0.0000)</td>
<td>0.0223 (0.6767)</td>
<td>0.0695 (0.1930)</td>
<td>-0.0139 (0.7946)</td>
<td>1.0000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total_Input_Cost_per_unit_Output_Growth_Rate</td>
<td>0.2149 (0.0000)</td>
<td>-0.1420 (0.0076)</td>
<td>-0.0411 (0.4416)</td>
<td>-0.0334 (0.5321)</td>
<td>0.0491 (0.3584)</td>
<td>1.0000</td>
<td></td>
</tr>
<tr>
<td>Labour_Market_Flexibility_Growth_Rate</td>
<td>-0.0583 (0.2757)</td>
<td>-0.0571 (0.2857)</td>
<td>-0.0184 (0.7310)</td>
<td>0.0136 (0.8002)</td>
<td>-0.1065 (0.0462)</td>
<td>0.1462 (0.0061)</td>
<td>1.0000</td>
</tr>
</tbody>
</table>

*Note: values in parenthesis give the level of significance*
Table 3
Correlation Coefficient of Explanatory variables in Regression Equation 2

<table>
<thead>
<tr>
<th></th>
<th>Labour_Market_Flexibility_Growth_Rate</th>
<th>Technological change</th>
<th>Wage growth Rate</th>
<th>Output_Growth_Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Labour_Market_Flexibility_Growth_Rate</td>
<td>1.0000</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Technological change</td>
<td>0.0136 (0.8002)</td>
<td>1.0000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wage growth Rate</td>
<td>-0.0217 (0.6847)</td>
<td>0.1383 (0.0094)</td>
<td>1.0000</td>
<td></td>
</tr>
<tr>
<td>Output_Growth_Rate</td>
<td>0.1142 (0.0325)</td>
<td>0.0961 (0.0718)</td>
<td>0.2268 (0.0000)</td>
<td>1.0000</td>
</tr>
</tbody>
</table>

Note: values in parenthesis give the level of significance

Table 4
Equation1: Pooled Panel Regression with Robust standard Error

| Independent Variable                                   | Value of Coefficient | Std. Err. | t      | P>|t|    | Statistical Significance at 5% level |
|---------------------------------------------------------|----------------------|-----------|--------|--------|-------------------------------------|
| Growth Rate of Output lag1                             | -1215029             | .0610402  | -1.99  | 0.047  | Significant                         |
| Technological Change                                   | .001715              | .0005385  | 3.18   | 0.002  | Significant                         |
| Growth Rate of Wage Cost Per Unit of Output            | -.5846804            | .1037982  | -5.63  | 0.000  | significant                         |
| Growth Rate of Total Input Cost Per Unit of Output     | -.0866525            | .6405072  | -0.14  | 0.892  | Insignificant                       |
| Growth Rate of Net Fixed Capital Stock lag1            | -.0789331            | .1768525  | -0.45  | 0.656  | Insignificant                       |
| Growth Rate of Net Fixed Capital Stock lag2            | -.0047898            | .1260702  | -0.04  | 0.970  | Insignificant                       |
| Growth Rate of Labour Market Flexibility               | .0254202             | .0755917  | 0.34   | 0.737  | Insignificant                       |
| Constant Term                                          | .083756              | .0255637  | 3.28   | 0.001  | significant                         |
| Dependent Variable: Growth Rate of Output              | Number of Observation: 352 | F(7,344) = 11.53 | R-squared = 0.2569 | Root MSE = 0.2453 |

Table 5
Equation2: Pooled Panel Regression with Robust standard Error

| Independent Variable                                   | Value of Coefficient | Std. Err. | t      | P>|t|    | Statistical Significance at 5% level |
|---------------------------------------------------------|----------------------|-----------|--------|--------|-------------------------------------|
| Growth Rate of Output                                  | .3312669             | .055072   | 6.02   | 0.000  | Significant                         |
| Technological Change                                   | .0001137             | .0002802  | 0.41   | 0.685  | Insignificant                       |
| Growth of Wage Rate                                    | -.3689253            | .0812437  | -4.54  | 0.000  | significant                         |
| Growth Rate of Labour Market Flexibility               | -.0084198            | .0290925  | -0.29  | 0.772  | Insignificant                       |
| Constant Term                                          | -.0090189            | .0081839  | -1.10  | 0.271  | Insignificant                       |
| Dependent Variable: Growth Rate of Workers             | Number of Observation: 352 | F(7,344) = 13.80 | R-squared = 0.2997 | Root MSE = .1453 |
References


End Note

3 A detail account of this increasing contractualisation of workers has been given in Sunanda Sen and Byasdeb Dasgupta’s forthcoming book, Unfreedom and Waged Work: Labour in India’s Manufacturing Industry, Chapter 2, Sage-India, Delhi, 2009
4 This is similar with the finding of Guha Atulan (2008).
5 Capital is net fixed capital stock of organized manufacturing sector at 1993-94 prices. The data source is NAS. Labour is ‘workers’ in organized manufacturing sector provided by EPWRF’s ASI database.
6 The data of output for organized manufacturing sector has been taken from EPWRF’s ASI database and it is deflated by the WPI series of RBI to transform it in 1993-94 prices.
7 Guha, Atulan (2008)
9 Nominal wage bill for workers has been taken from EPWRF’s ASI database. Dividing the wage bill with the number of worker we got the Nominal average wage rate. Nominal average wage rate is deflated by consumer price index number of industrial workers which is reported in Hanbook of Indian Economy, Reserve Bank of India.