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Factors Influencing Indian Manufacturing Firms' Decision to Hire Contract Labour

Jaivir Singh

Deb Kusum Das

Homagni Choudhury

Prateek Kukreja

Kumar Abhishek

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Table of Contents

Abstract.....	i
1. Introduction.....	1
2. Context.....	2
3. Survey Description.....	4
4. Some Descriptive Statistics from the Subsample of Firms Employing Contract Labour	8
5. Model and Explanatory Variables	10
6. Results	13
7. Conclusion	17
References.....	18

List of Figures

Figure 1: Trends in Employment of Contract Workers in Indian Organised Manufacturing Sector (1998 to 2014).....	3
Figure 2: Seven Indian states employing contract workers by share in GVA.....	5
Figure 3: Selection of Manufacturing Industries based on GVA share and percentage share of industry in contract workers.....	5
Figure 4: Contribution of Indian states to GVA by industry	6
Figure 5: Comparison of Contract Workers and Regular Workers on the basis of tasks performed by size class of firms	8
Figure 6: Comparison of Contract Workers and Regular Workers on the basis of tasks performed across industries	9
Figure 7: State-wise Comparison of Contract Workers and Regular Workers on the basis of skills	9

List of Tables

Table 1: Descriptive Statistics of Variables	13
Table 2: Maximum Likelihood Estimates of the Logit Model: 3 specifications	16

Abstract

The present study attempts to investigate the factors affecting a firm's decision to hire contract workers. We use information from a specially commissioned survey of manufacturing firms undertaken in 2014 by ICRIER, as part of a World Bank funded project 'Jobs and Development: *Creating Multi-Disciplinary Solutions*'. The survey covered 500 firms in five states, namely Haryana, Maharashtra, Tamil Nadu, Karnataka and Gujarat and spread across five major industries; viz. Auto Components, Electronics and Electrical Equipment, Leather Products, Textile and Garments and Food Processing. The estimation is carried out using a logit model, where the firm's decision, whether or not to hire a contract worker is assumed to be a binary dependent variable. Our findings suggest that the firms producing for the export market are more likely to engage contract workers than the ones producing for domestic market. Secondly, presence of trade union activity considerably increases the likelihood for a firm to hire-in contract worker. Further, we find that there seems to be a higher probability for enterprises belonging to a capital-intensive industry to hire in contract workers than the ones belonging to a labour-intensive industry. Next, our findings also suggest that the firms located in states having a 'protective' labour legislation are more likely to hire contract workers than the ones located in states with rather flexible labour regulations. The most interesting finding, however, pertains to the 'skills' variable. We find that firms with a higher employment of unskilled workers are more likely to hire contract workers than the firms employing a lesser number of unskilled workers.

Keywords: *Contract worker, labor regulations, manufacturing survey data, employment,*

JEL Classification: *J08, J21, J50, J53*

Authors' Email: jaivirs@gmail.com; dkd_ramjas@yahoo.com; hoc6@aber.ac.uk;
prateekukreja89@gmail.com; kabhishek@icrier.res.in

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Factors Influencing Indian Manufacturing Firms' Decision to Hire Contract Labour¹

Jaivir Singh*, Deb Kusum Das[#], Homagni Choudhury[^], Prateek Kukreja[♦], Kumar Abhishek[•]

1. Introduction

It is well known in the Indian labour literature that at least thirty five per cent of the workers employed in the Indian formal manufacturing sector are 'contract' workers i.e. this category of workers are not directly hired by employers but rather through the offices of labour contractors. Such workers typically end up having a different set of employment rights from those enjoyed by directly employed workers, particularly with respect to job security. Since employers make the decision to hire an appropriate mix of workers, we empirically investigate the role of various product and factor market variables that influence this decision. We use information from a specially commissioned survey of manufacturing firms undertaken by ICRIER, as part of a World Bank funded project 'Jobs and Development' 2014-2016 to construct a series of explanatory variables that influence the choice of employers. We model the hiring choice of employers as being based on cost considerations. Since such costs cannot easily be observed, we treat cost as a latent variable residing behind the observed action as to whether a firm hires contract labour or not. This generates the binary dependent variable as to whether a firm hires in contract labour or not, which in turn is linked to a set of explanatory variables using a logit model.

To this end we begin in Section II with a brief (and necessarily selective) review of some of the relevant literature to provide the broad context within which we locate our study. This is followed in Section III with a description of the survey. In Section IV, we describe the model and the explanatory variables. Section V discusses the results of our estimation and we conclude in Section VI.

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* Professor, Centre for Study of Law and Governance, JNU, New Delhi

[#] Associate Professor, Department of Economics, Ramjas College, University of Delhi and External Consultant, ICRIER

[^] Lecturer in Economics, Aberystwyth Business School, Aberystwyth University, Aberystwyth (UK)

[♦] Research Associate, ICRIER

[•] Research Assistant, ICRIER

2. Context

The literature on the formal sector labour market has largely concentrated on the persistent paradox that characterises the Indian economy – namely, that in spite of a comparatively high rate of growth of output, the expansion in employment is quite small. It is standard practice to attribute this to the constriction in the demand for labour caused by restrictive labour laws. Starting with the earliest paper on the issue (Fallon and Lucas 1993), almost all the subsequent work of this variety has emphasized the *Industrial Disputes Act* as the source of the rigidity in law. A much-cited paper (Besley and Burgess 2004) related pro-labour/pro employer legislative changes made by Indian states to the *Industrial Disputes Act* to both levels of output and employment², concluding that pro-labour states perform poorly on both counts. While some successive work has criticized these results by arguing that the methods for creating this typology were flawed (Bhattacharjea 2006, 2009) others have pushed the same measure (Aghion et al 2008, Ahsan and Pages 2009) or expanded the measure to include state level changes in other labour laws (OECD, 2007; Dougherty, 2009) to reinforce the view that the more pro-labour states have worse labour and output outcomes (Dougherty et al., 2011). In much of this work there is at the best passing reference to the growth of what is referred to as *contract labour* in India.

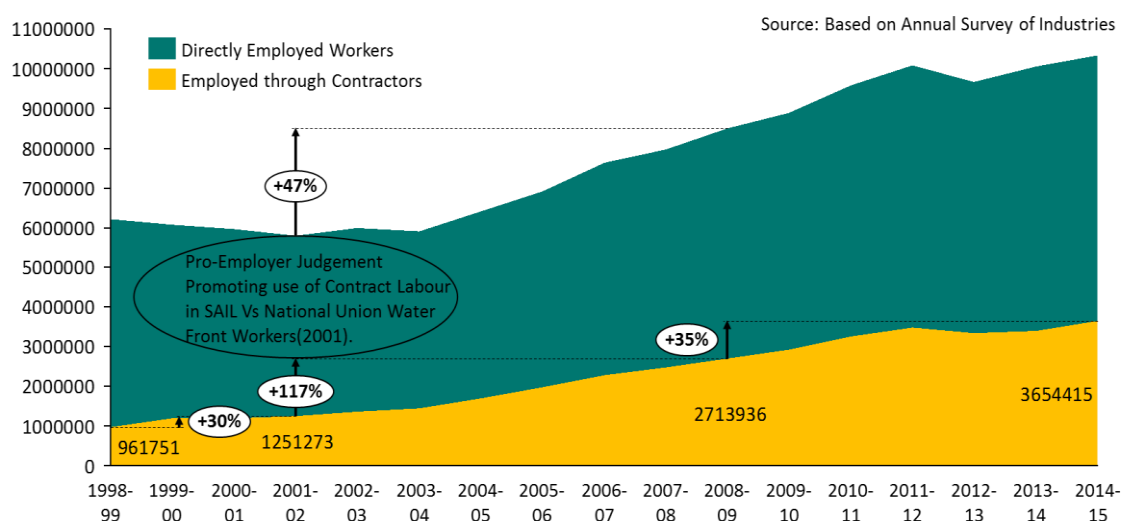
The term ‘contract’ worker refers to labour hired by firms through the offices of a labour contractor, often employed in jobs where they work alongside permanent workers. A contract worker can be fired more easily than regular workers. To understand the legal regimes governing contract workers it may be firstly noted that such workers are covered by the Contract Labour (Regulation and Abolition) Act, 1970 (hereafter, CLA)³. The Act is typically applicable to establishments employing a minimum of 20 contract workers and it regulates the work conditions of contract workers by requiring the registration of the principal employer and licensing of labour contractors. Apart from regulating the use of contract labour, the CLA was also legislated to abolish contract labour – Section 10 of CLA empowers the government to prohibit the use of contract labour if it feels that contract workers are being used for perennial jobs, regular workers are doing the same job or the work is necessary for the industry. Over the years, central and state governments have issued notifications prohibiting the employment of contract workers. However the statute is silent on what is to be done with the abolished contract labour – do they lose their jobs or are principal employers obliged to hire them as permanent labour? Since the statute is silent on the matter, the issue of what is to be done with such abolished contract labour came to be decided by the Indian Supreme Court. In an initial judgment (Air India Statutory Corporation v. United Labour Union (1997) (9) SCC 377) the court required the principal employer to absorb such labour as regular workmen but a later judgment (Steel Authority of India v. National Union Water Front Workers AIR 2001 SC 3527), which consisted of a larger Division bench, said that there was no obligation on the part of the principal employer to absorb abolished contract labour. The Steel Authority judgment

² Following from the provisions of the Indian Constitution, labour issues in India fall under both Central and State government jurisdiction, which has led to variation in labour laws across states since each state legislature can amend labour regulations, rules and practices.

³ For a more complete description see Das et. al. (2015) and Singh et al. (2016)

enabled employers to use contract labour for a variety of jobs without the fear that they would have to absorb them into permanent jobs. As can be seen in Figure 1, there is a substantial rise in contract workers with the spurt originating from around the time of the Steel Authority judgment. By 2011, around thirty four per cent of labour employed in the manufacturing sector is categorised as contract labour (See India Labour and Employment Report 2014).

Figure 1: Trends in Employment of Contract Workers in Indian Organised Manufacturing Sector (1998 to 2014)



Source: Based on ASI

A literature noting and analysing this expansion of contract labour has grown over the recent past. The bulk of this literature links the expansion of contract labour as a reaction to the strength of the employment protection legislation. For instance evidence has been provided to show that firms facing more stringent labour regulations hire more contract labour than firms situated in states facing more relaxed regulations (Chaurey, 2013). In a similar vein yet other work shows that firms in states that have legislated stronger employment protection laws *and* implement them more strictly tend to hire more contract labour (Sapkal, 2016). It has also been shown that while labour productivity of regular workers is higher than that of contract workers, firms in states with stronger employment protection legislation use more contract labour and are therefore less productive (Sofi and Sharma, 2015). While some empirical work suggests that other factors such as product market regulations and infrastructural bottlenecks also contribute to explaining differential state outcomes, the link between inflexible labour regulation and poor performance is shown to be persistent, as well as the use of contract labour to overcome labour market rigidities (Kapoor, 2014). Some of the literature also emphasises that apart from a positive relationship between the use of contract labour and pro-worker labour institutions, the choice of firms hiring contract labour is also linked to the trade exposure of firms (Maiti et al. 2009 and Sen et al. 2013). These views have been somewhat countered in a recent work that uses plant level data (drawn from the ASI data set) to conclude that while the increasing use of contract workers was perhaps a reaction to labour market rigidities in the early 2000s, this is not a suitable explanatory factor to account for the increasing proportion of

contract workers hired more recently (Goldar 2016). Furthermore the study also notes a negative relationship between import competition and the use of contract labour - contrary to the earlier literature. The study finds the relationship between the proportion of contract workers and plant size to be positive and the relationship between the proportion of contract workers and capital intensity to be negative (i.e. greater share of contract workers in labour intensive industries). It also turns out that the study finds that plants located in rural areas employ higher shares of contract labour than their urban counterparts.

Therefore, the modest but growing literature on what explains the increasing use of contract labour in formal manufacturing in India has so far been inconclusive. This paper therefore aims to contribute to this debate by using a primary survey of firms, as described earlier.

It is quite possible that the flexibility offered by easing up of contract labour governance regime pursuant to the Steel Authority judgment has worked itself out and wherever it made sense for employers to use contract labour, such adjustment has been made. It is therefore important to understand the characteristics of firms that do make use of contract labour. While a good deal of information can be gleaned from the rich ASI data set, a comprehensive and pointed survey is also helpful to discover patterns associated with the hiring of contract labour in the Indian manufacturing sector – both to locate new factors as well as to see if some of the factors mentioned in the existing literature on the subject are recurrent.

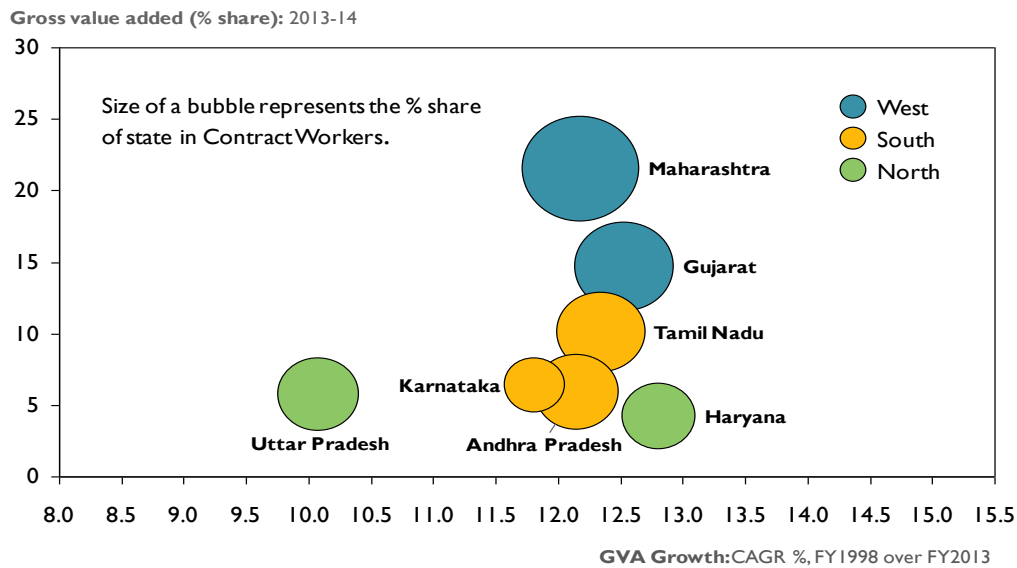
3. Survey Description

The data used in this paper draws from a specially commissioned survey of manufacturing firms undertaken by ICRIER, as part of a World Bank funded project ‘Jobs and Development’ 2014-2016. The objective of the survey was to undertake a comparative study between regular workers and contract workers while focusing primarily on issues concerning contract workers. The selected 500 firms, chosen out of the larger ASI frame 2013-14, are located in five states, namely Haryana, Tamil Nadu, Maharashtra, Gujarat and Karnataka and spread across eight industry divisions according to National Industrial Classification (NIC) 2008; viz. Manufacture of Food Products, Manufacture of Textiles, Manufacture of Wearing Apparel, Manufacture of Leather and Leather Products, Manufacture of Computer, Electronic and Optical Products, Manufacture of Electrical Equipment, Manufacture of Motor Vehicles, Trailers and Semi-Trailers and Manufacture of Other Transport Equipment.

Choice of States and Industries

The selection of the industries and the states for the survey has been founded on overall employment and output figures pertaining to the Indian manufacturing sector, with the rough attempt to capture states and industries that contribute the most to both output and employment.

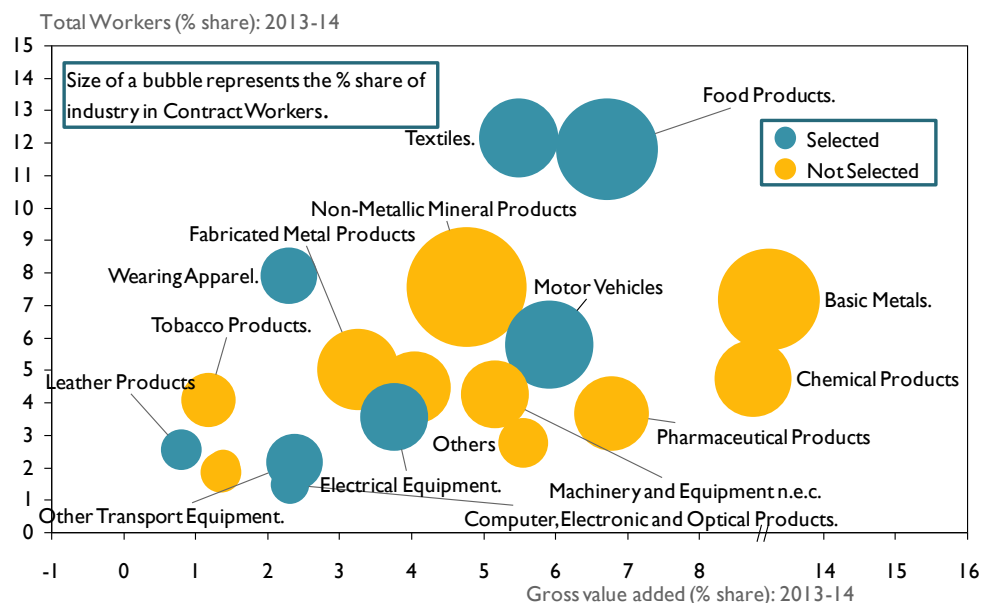
Figure 2: Seven Indian states employing contract workers by share in GVA



Source: Based on ASI (2013-14)

As can be seen in Figure 2, the selected states show similar levels of GVA growth of around 12-13% over 1998-2013. Further these states account for about 56% of the GVA and account for around 50% of the total contract workers engaged in the Indian Manufacturing. It may be further noted that among the five states chosen, Maharashtra, Gujarat and Tamil Nadu are prominent in driving both output and employment since they generate 45% of the GVA and employ 40% of total workers in the Manufacturing Sector.

Figure 3: Selection of Manufacturing Industries based on GVA share and percentage share of industry in contract workers



Source: Based on ASI (2013-14)

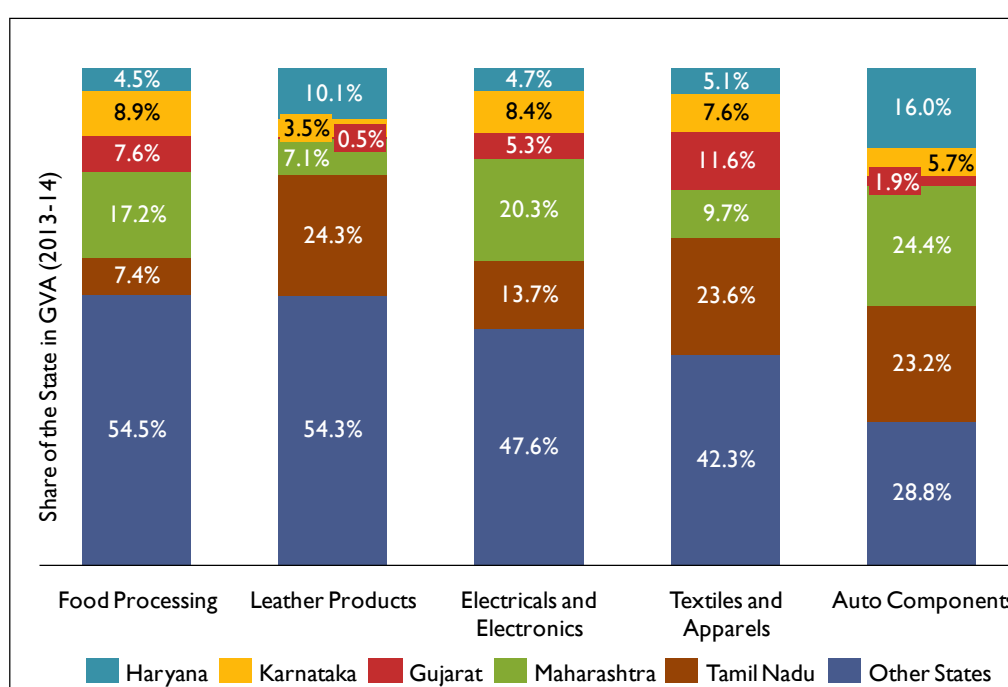
Turning to the choice of industries, the Indian manufacturing sector consists of industries that vary in production technology with some industries making large value additions but employing a small fraction of the workforce, while on the other hand, there are other industries that contribute equally to the GVA but employ large fraction of the workforce. As can be seen in Figure 3, Textile, Food Products and Motor Vehicle contribute about 6% of the GVA but Textiles and Food Products employ about 5% more workers than Motor Vehicle Industry. We made our choice of the set of industries for the survey to reflect a range of GVA shares on one hand and on the other to represent a range of employment shares as well. At an aggregate level these industries contributed 30% to the GVA during 2013-14 and employed 36% of the contract workers in Indian Manufacturing.

Further, six, out of these eight selected industries are grouped into three broad categories as follows:

- (a) Manufacture of Textiles and Manufacture of Wearing Apparel are combined to form Manufacture of Textile and Wearing Apparel;
- (b) Manufacture of Computer, Electronic and Optical Products and Manufacture of Electrical Equipment are combined to form Manufacture of Electricals and Electronics
- (c) Manufacture of Motor Vehicles, Trailers and Semi-Trailers and Manufacture of Other Transport Equipment are combined to form Manufacture of Auto Components

So, our analysis henceforth shall be based on five major industrial classifications, viz. Auto Components, Electronics and Electrical Equipment, Leather Products, Textile and Apparels and Food Processing.

Figure 4: Contribution of Indian states to GVA by industry



Source: Based on ASI (2013-14)

It may also be noted that in three of these 5 selected industries-Electronics, Textiles and Auto components, more than fifty percent of the value added originates from the chosen states as can be seen in Figure 4. In the other two selected industries, i.e. Leather Products and Food Processing, chunk of GVA originates from Uttar Pradesh, Andhra Pradesh and Punjab (Food Processing) and Uttar Pradesh and West Bengal (Leather), these states are included under other states in Figure 4.

Survey Details

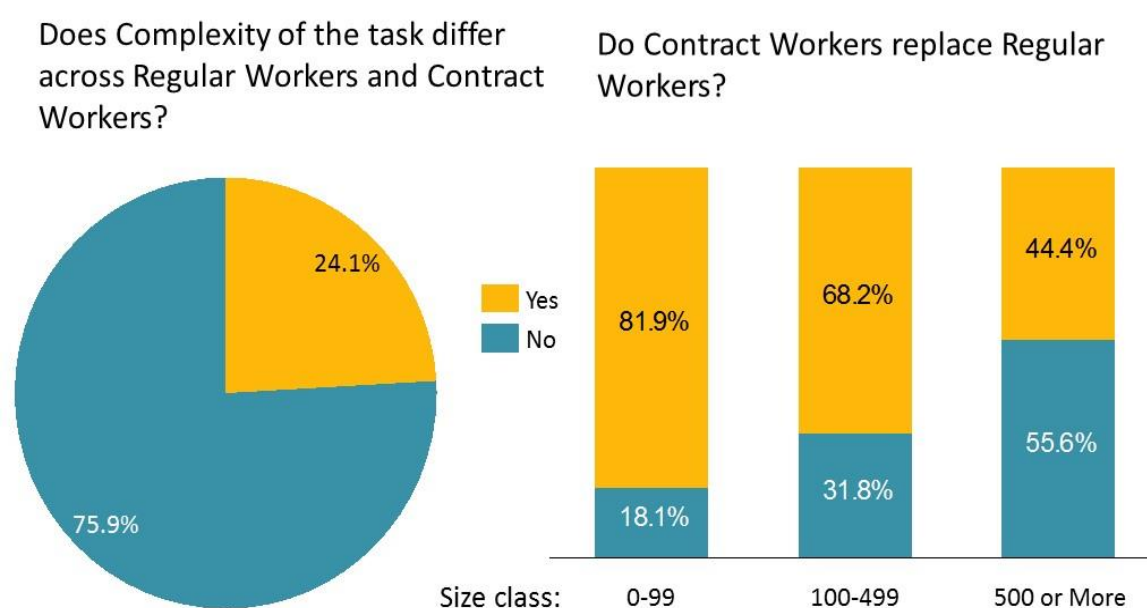
Having decided on the States and the industries to be covered, the enterprises covered by the survey were chosen using random sampling technique drawing from the population of Annual Survey of Industries (ASI) frame of 2013-14 of registered manufacturing firms across different size class. Using the list of the firms located in each of the chosen states pertaining to the chosen industry, firms were classified into three different employment size classes. The firms employing less than 100 workers were classified in 1st class, the next class consisted of firms employing 100 or more workers but less than 500 and the last class included firms employing more than 500 workers. Given the distribution of the firms across each employment size class, twenty firms were selected for each state and each industry in proportion to the employment levels associated with each class. The size class was identified keeping in mind the potential threshold effects of Chapter V-B of the Industrial Disputes Act, which requires firms employing more than hundred workers to gain permission from the government before retrenchment, lay-off or closure. The dualistic size structure in Indian manufacturing arising potentially due to threshold effect has concentrated the mass of employment in small and large firms as pointed out by various studies (Mazumdar and Sarkar, 2013 and Hasan and Jandoc, 2013). The threshold effects begin to matter for our study because it has been found by Ramaswamy (2013) that contract worker intensity is higher in size class 50-99 relative to others supporting the proposition that firms hire contract worker to avoid compliance under the IDA act.

The survey solicited a good amount of information from the identified firms. Apart from being asked whether the firm employed contract labour or not, the survey gathered information on the year of establishment, turnover, whether the firm was a MSME or not, was the firm located in a SEZ or not, whether the firm exported its output or not, the number of workers employed with details dividing workers into professionals, skilled, unskilled workers, cost of labour as proportion to total costs, presence of a trade union, what is the challenge to business, ranking issues of labour according to their intensity – how employers relatively valued skills, labour availability and retrenchment or labour adjustment issues. In addition to this the set of firms that employ contract labour were additionally asked questions on whether the contract labour hired was professional, skilled or unskilled, whether contract labour and regular workers work side by side or are allocated different tasks, the education level of both types of workers and whether differential wages are paid.

4. Some Descriptive Statistics from the Subsample of Firms Employing Contract Labour

As discussed above, over the course of the survey, firms that employed contract workers were asked if the complexity of the task performed differed across regular workers and contract workers. As shown in Figure 5, only quarter of the firms said ‘Yes’ with three-fourths of them saying ‘No’.

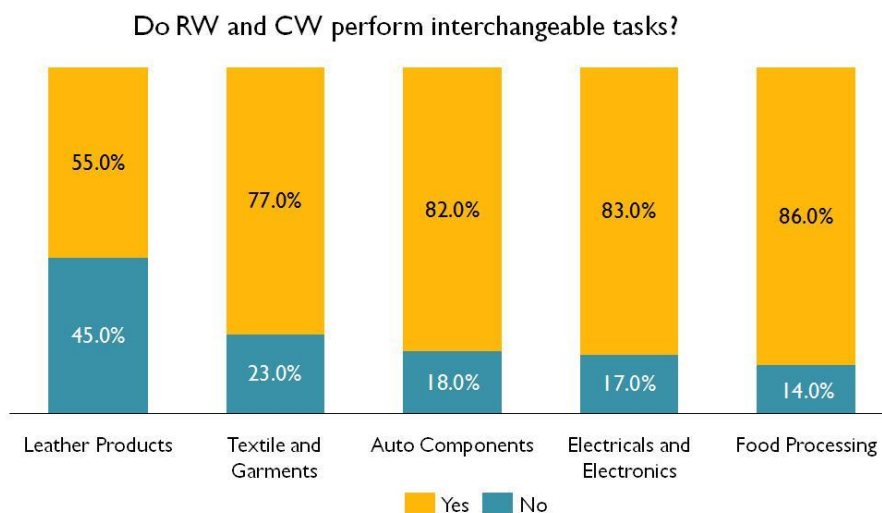
Figure 5: Comparison of Contract Workers and Regular Workers on the basis of tasks performed by size class of firms



Source: ICRIER Survey on Labour Issues in Indian Manufacturing Sector 2015

It can also be seen that this substitutability between the two categories as per the perception of employers diminishes as the size of the firm goes up. Examining this from an industry perspective (see Figure 6), we see that, barring the leather industry, less than a fourth of the firms in each industry say that regular workers and contract workers do not perform interchangeable tasks.

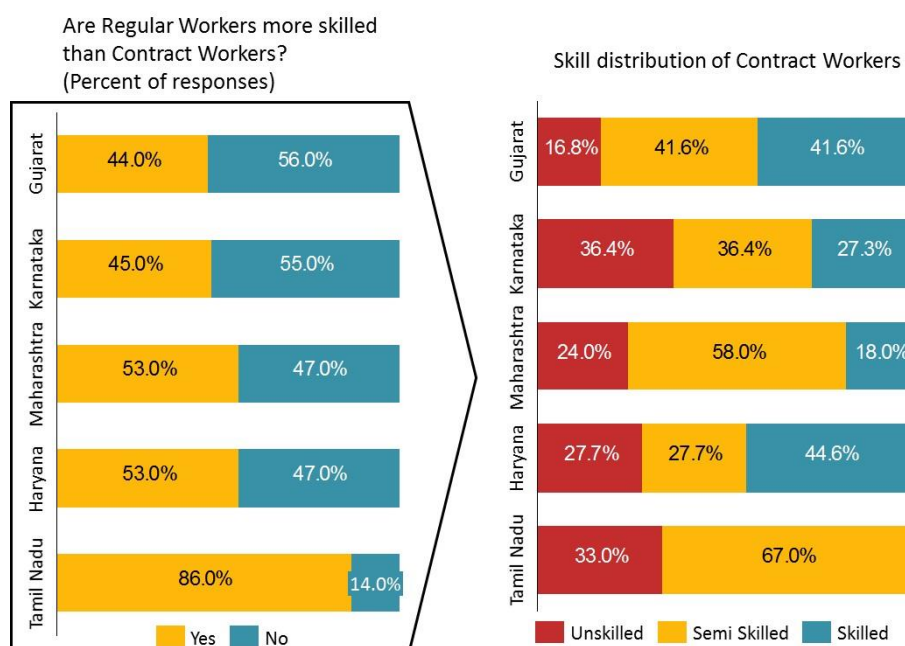
Figure 6: Comparison of Contract Workers and Regular Workers on the basis of tasks performed across industries



Source: ICRIER Survey on Labour Issues in Indian Manufacturing Sector 2015

In this context it is also important to reflect on the information shown in Figure 7. On the left hand side of the figure, a state-wise break up of response to the question of skills is shown – in most states approximately half of (sometimes less than half) the employers say that regular workers are more skilled than contract workers. On the right hand side of the figure we see the response to further questions on the skill profile of contract workers –the bulk of employers report contract labour as being skilled or semi-skilled

Figure 7: State-wise Comparison of Contract Workers and Regular Workers on the basis of skills



Source: ICRIER Survey on Labour Issues in Indian Manufacturing Sector 2015

The most interesting finding of the survey is that not all firms surveyed report hiring in contract labour and those that do, as per our findings, do so more or less along lines suggested in the literature. In addition to this we notice that contract workers are not strongly linked to unskilled jobs but appear to have spilled over to more skilled jobs at the margin as well. While initially hiring in contract labour may have been a response to get a work force that can be easily dropped in downturns – there may be a problem as contract labour is hired for more skilled jobs. The problem comes from the fact that such workers are not governed by any law – in fact they function more or less outside formal law – this could mean over a period they may not be able to invest in the job and thus be less productive than they would have been if governed differently. In terms of jobs for the future, contract labour at the best can help fill unskilled jobs –for good jobs, more comprehensive reform is needed.

5. Model and Explanatory Variables

From our institutional description of the Steel Authority judgement of the Indian Supreme Court, it is clear that Supreme Court led judicial interpretations of the law made it both easier for employers to fire contract labour (or at least they are not forced to give contract labour employed for perennial tasks regular labour status) and pay contract workers lower wages than those paid to regular workers. It has been shown by Goldar that wages paid to contract labour are greater, equal and less than the wages paid to regular workers but on the average are seventy five per cent lower than wages paid to regular workers (Goldar, 2016). Prima facie, both on account of lower firing costs as well as the possibility of paying lower wages, the law has created an economic incentive for employers to hire in contract labour – and, indeed as we have noted there has been a large expansion in the overall number of contract labour. While this broad expansion is clear, it is important for us to see how this apparent cost advantage influences firms to hire in contract labour. Our survey shows that not all the enterprises in our sample report using contract labour, in fact only about thirty five per cent of enterprises say that they use contract labour while about sixty five per cent of the enterprises report not employing contract labour. If the decision to hire contract labour is based on cost considerations, enterprises that hire in contract labour presumably do so because they perceive some sort of a cost advantage.

The cost faced by an employer that hires contract and regular labour can be represented as $C_C = f_1(x_1) + \varepsilon_1$ where C_C is the cost of hiring in a mix of both contract as well as regular labour and x_1 represents labour market and output market conditions. Similarly the cost faced by an employer who hires only regular labour is given by the expression $C_R = f_2(x_2) + \varepsilon_2$ where C_R is the cost of hiring in only regular labour and x_2 represents labour and output market conditions. It is clear that firms who hire in both categories of labour – contract and regular, if and only if $C_C < C_R$. We cannot of course easily observe these costs and instead only observe whether the contract labour is hired alongside regular labour ($y = 1$) or not ($y = 0$). Thus, an employer hires in contract labour only if $C_C < C_R$, or to state it otherwise $C_R - C_C > 0$ – i.e. contract labour is

hired to work alongside regular labour only if there is some cost advantage. We can represent the relationship between this cost differential and the factors that influence it in the form:⁴

$$C_R - C_C = x^T \beta + u$$

where $u = \varepsilon_2 - \varepsilon_1$ (a random term) and $x = (x_1, x_2)$ is a vector of k explanatory variables and β is a $k \times 1$ vector of unknown parameters. Since we cannot observe $C_R - C_C$ and the expression $C_R - C_C > 0$ must hold, we can say that

$$\Pr(y=1 | X=x, \theta) = \Pr(u > -x^T \beta | x, \theta) = F(x^T \beta | x, \theta)$$

Thus, here y takes the value 1 if an enterprise reports hiring contract labour and zero otherwise, $x = (x_1, \dots, x_k)^T$ is a vector of explanatory variables, (β, θ) is a vector of unknown parameters that must be estimated and $F(\bullet)$ is the conditional distribution function of the random term. In other words the probability of observing the event ($y=1$) is given by the cumulative density function $F(\bullet)$ and if we assume $F(\bullet)$ can be represented by a logit distribution then the maximum likelihood method can be used to obtain estimates of β .

Explanatory Variables

As mentioned above, the explanatory variables in this model represent both factor market as well as product related characteristics facing employers. The variables we were able to include using the information available from the survey are:

1. Age of the firm (firm_age) - This variable is included to see whether older firms that may have a tradition of employing regular labour and therefore persist in doing so into the future.
2. Output (logturnover0405prices) – This variable would presumably have a direct effect on costs. It is also the case that often enough levels of output are also used as a measure of size. The variable is extracted from the turnover figures reported by the firms by deflating the term with the 2004-05 WPI and taking the logarithmic value.
3. MSME (MSME) – This dummy variable, while ostensibly a measure of size in the sense it captures units below certain stated thresholds of investment, also captures elements of Indian Industrial Policy. Firms classified as a MSME, need to be from a scheduled list. This list initially set up largely to protect smaller manufacturing firms from international competition but more recently the government has shifted its policy to provide MSME firms with fiscal subsidies. The variable is thus able to capture firms that are targeted by government policy to be nudged and subsidized.
4. Exports (export)-This variable also enters the equation as a dummy variable, capturing whether the firm manufactures for export or not. As we have seen some of the literature on contract labour sees a positive relationship between import competition and the use of contract labour (Maiti et al. 2009 and Sen et al. 2013). Our survey does not allow us to get

⁴ It may be noted that we assume costs to be static in this model, entirely because our data from a primary survey is a cross-section and therefore it is not possible for us to account for inter-temporal changes. However, in reality, the adjustment costs involved in hiring and firing of regular workers may be dynamic in nature. Nevertheless, we assume that our specification provides a broad insight into how cost differential (whether static or dynamic) affects a firm's decision to hire contract workers.

data that can allow us to create a variable that will capture import competition, so whether a firm exports its products or not becomes a proxy measure for a connection with international markets.

5. Labour Intensity (labinten) – This variable classifies the industries associated with the sample into two categories one, labour-intensive and two, capital-intensive. Thus Food Processing, Leather Products and Textiles and Garments are labour intensive, while Electricals and Electronics and Auto Components are capital intensive. This division is made on the basis of capital labour ratio value of these industries between 2009 and 2014. The industries which have a capital labour ratio value higher than the average value of the five industries combined are taken as capital intensive industries, whereas the industries, having a lower average capital labour ratio value than the overall average are taken as labour intensive industries.
6. Rigidity of the Labour Law Regime (rigid) – As we have noted much of the literature around the impact of labour law on employment and output is located around the state level variation in labour legislation with some states classified as pro-labour and others as pro-employer. While there is not much legislative variation in Contract Labour Act (at least when the sample was canvassed) this variable is included to partially to be able to place our results in the context of existing studies as well as to capture the general variation in the legislated labour law regime across the states covered in our sample. We classified _state as being rigid on the basis of labour market rigidity index pioneered by Besley and Burgess (2004).
7. Level of Skill (unskillratio1 and unskillratio2) – The firms canvassed were asked to divide their work force into four categories – professional, skilled, unskilled production and unskilled non production. Using this information we estimate the ratio of the number of unskilled production workers to total workers (unskillratio1) and the ratio of number of unskilled non production workers to total workers (unskillratio2) and use these as explanatory variables based on the conventional conjecture that much of the hiring in of such workers is confined to tasks that are associated with lower levels of skill.
8. Trade Union Activity (TU) - The firms were asked whether there was a trade union that was active in relation to their enterprise and a binary variable has been constructed using this information. The degree of trade union activity is probably best understood as an index of labour bargaining power prevalent in relation to each firm canvassed in the sample.
9. Ratio of Labour Costs to Total Costs (Labourcostshare_1314)- The survey provides no direct information on wages (though firms that hire in contract labour report paying lower wages to contract labour than they pay to regular labour) except that firms expend a certain proportion of total costs on labour. This is the only variable from within the survey that comes the closest to incorporating some element of wages paid out to labour.
10. Employment Size (Emp_1, Emp_2 and Emp_3) These variables capture the categories of employment size of the firm and thus among other things act to capture size as a factor that can influence the firm to hire in contract labour. As we have noted this variable also helps us connect to some of the literature on labour regulations and threshold effects.

6. Results

Before we move to the results showing the estimated parameters, it is useful for us to take a quick look at the descriptive statistics of the explanatory variables shown in Table I below. As can be noted many explanatory variables are represented by dummies with four out of the thirteen variables continuous.

Table 1: Descriptive Statistics of Variables

S.No.	Variable	Unit	Obs	Mean	Std. Dev.	Min	Max	Variable Type
1	firm_age	Year	464	21.655	14.705	0.000	120.000	Discrete
2	Logturnover0405 prices		420	2.232	1.825	-2.133	8.221	Continuous
3	MSME	Dummy	474	0.812	0.391	0.000	1.000	Dummy
4	export	Dummy	493	0.519	0.500	0.000	1.000	Dummy
5	labinten	Dummy	493	0.602	0.490	0.000	1.000	Dummy
6	rigid	Dummy	493	0.233	0.423	0.000	1.000	Dummy
7	unskillratio1	Ratio	444	0.360	0.213	0.000	0.900	Continuous
8	unskillratio2	Ratio	440	0.118	0.114	0.000	0.844	Continuous
9	TU	Dummy	493	0.093	0.291	0.000	1.000	Dummy
10	Labour cost share 1314	Ratio	419	0.336	0.185	0.020	1.000	Continuous
11	Emp_1	Dummy	493	0.627	0.484	0.000	1.000	Dummy
12	Emp_2	Dummy	493	0.310	0.463	0.000	1.000	Dummy
13	Emp_3	Dummy	493	0.063	0.243	0.000	1.000	Dummy

Source: ICRIER Survey on Labour Issues in Indian Manufacturing Sector 2015

We have estimated three variants of the logit model. In Specification I, explanatory variables 1 to 9 were taken into account to estimate parameter values, in Specification II, variables 1 to 10 were incorporated and in Specification III, all the thirteen explanatory variables were used in the estimation. As mentioned earlier we assume an underlying logit distribution of the error terms and use the Maximum Likelihood (Logit Model) method to estimate parameters. The results are displayed in Table 2.

The first point to note is that the explanatory variables -firm age and MSME are statistically insignificant across all three specifications of the model. Additionally the variable - Labourcostshare1314, capturing ratio of labour costs to total costs, which is included in Specification 2 and 3 of the model, is also insignificant. A brief comment is in order to comment on the signs of the coefficients even though they are insignificant. The firm age coefficient is strangely positive, as one would have intuitively expected older firms not to hire in contract labour. It is difficult to comment on the negative sign of the coefficient associated with MSME in specification 1 and 2.

Turning to the significant variables, it can be seen from the table that the variable: logturnover0405prices is positive and statistically significant across all model specifications. This is in line with our expectation, as this variable is taken as a measure of size of a firm. There seems to be a greater chance for a larger firm (in terms of value of turnover) to enter into

a contract with the contractor than a smaller firm, since, the contractor, himself would prefer entering into a contract with a well established firm, having a high value of turnover, rather than some small, not-so established unit. Next, the export variable is positively signed and is significant across all model specifications. This suggests that there is a good chance that firms that produce for the export market will hire in contract labour. This is in tune with some of the earlier work that suggests that pressures of international competition compel employers to hire contract labour (Maiti et al. 2009 and Sen et al. 2013). Also, the uncertainty in foreign demand makes hiring of contract labour, a convenient choice for the employers, given that this form of employment provides a relatively greater amount of flexibility. Goldar (2009), on the other hand, finds an inverse relationship between export intensity and use of contract labour, emphasising on the fact that at lower levels of export intensity, cost and flexibility seems important for the industrial firm, which gets reflected in the use of contract labour. This difference in the result may be attributed to the fact that the variable “Exports” enters the two models differently. While in the present model, exports variable is introduced as dummy, Goldar uses the variable- export intensity in his study. Also corroborating the stance taken by Sen et al. 2013, we find that the Trade Union variable is persistently positively significant across all model specifications. This tells us that the presence of trade union activity and therefore the presence of greater labour bargaining power substantially increase the chances of a firm hiring in contract labour. This follows from the assumption that a regular worker has a greater chance of joining trade union as compared to a worker hired through contractor and therefore, the employer may prefer to employ a contract worker, rather than a regular worker, in an attempt to weaken the bargaining strength of the trade union. The same is also reflected in the odds ratio associated with the Trade Union variable. Also among the persistently significant variables across all model specifications is the degree of labour intensity. The negative coefficients and the high odds ratio suggests that firms from labour-intensive industries have a lower proclivity to hire in contract labour than capital-intensive industries.

We have tried to bring in the issue of labour market rigidity emphasised as legislative variation across states in the bulk of the literature on the Indian labour market by using the state-level index of labour market flexibility, pioneered by Besley and Burgess (2004) to classify the states covered by our survey, as ‘rigid’ and ‘non-rigid’. This variable is significant across all specifications and could perhaps be viewed as evidence supporting the view that states favouring protective labour legislation tend to increase the chances of firms, located in such states, hiring in contract labour. On the other hand, it may also be the case that the set of five states is too small to make this inference. As we have noted another strand of the literature on the Indian labour market studying the impact of labour laws on the size of firms has associated smaller firms with the use of contract labour, so as to escape coverage by the law. Our survey does not support this in the sense that the smallest employment size has a negative (and significant) relation with hiring in contract labour. This is in tune with the recent findings that large firms tend to hire in proportionally more contract labour than do smaller firms (Goldar, 2016).

One of the most interesting results from the estimation pertains to the Level of Skill variable – unskillratio1 and unskillratio2. As can be seen from Table 2, the variable unskillratio1 is

positive and statistically significant across all specifications, whereas the variable `unskillratio2` is insignificant across all specifications. This shows that the firms with a higher proportion of unskilled production to total workers are more likely to hire contract workers than firms with a lower share of unskilled production workers. On the other hand the share of unskilled non production workers in total workers does not significantly influence a firm's decision to hire contract workers. These variables were included as explanatory variables to see whether it is more likely that employers who hire in a lot of unskilled labour (whether production or non-production) will be more likely to hire in contract labour. The fact that there is a significant, albeit weak, association between probability of hiring a contract worker and share of unskilled production workers and not share of unskilled non-production workers tells us that contract workers are for sure not confined to peripheral activities of firms. Furthermore if we combine this with information provided on the left hand side of Figure 7 that shows that in most states about half of the firms employing contract labour do not report a skill difference between regular and contract workers, it could be maintained that there is some spillover of contract workers into skilled tasks. This issue clearly requires further investigation.

Further, the model seems to fit the data quite well in case of all the three specifications. As one could clearly observe in table 2, the likelihood ratio index is well above zero in all the specifications. The likelihood ratio index measures how well the model, with estimated parameters, performs compared with a model in which all the parameters are zero (which is usually equivalent to having no model at all). This comparison is made on the basis of the log-likelihood function, evaluated at both the estimated parameters (Log Likelihood (Beta)) and at zero for all parameters (Log Likelihood (Zero))⁵.

The likelihood ratio index is defined as

$$\rho = 1 - \frac{LL(\hat{\beta})}{LL(0)}$$

where $LL(\hat{\beta})$ is the value of the log-likelihood function at the estimated parameters and $LL(0)$ is its value when all the parameters are set equal to zero.

In case of Specification-2 and Specification-3 of the model, as one would see, the value of $LL(0)$ is same. Thus, we can compare the goodness of fit in these two models. Clearly, specification 3, with a higher value of ρ fits better than specification 2.

⁵ See Train (2009)

Table 2: Maximum Likelihood Estimates of the Logit Model: 3 specifications

<i>Dependent Variable</i>	Contract Worker Employed (Yes or No)					
<i>Explanatory Variables</i>	Specification 1		Specification 2		Specification 3	
	Coef.	Odds Ratio	Coef.	Odds Ratio	Coef.	Odds Ratio
firm_age	0.0002 (0.009)	1 (0.009)	0.004 (0.009)	1.004 (0.009)	0.001 (0.01)	1.001 (0.01)
logturnover0405prices	0.271*** (0.076)	1.311*** (0.099)	0.258*** (0.078)	1.295*** (0.101)	0.147* (0.088)	1.158* (0.101)
MSME	-0.267 (0.356)	0.765 (0.272)	-0.164 (0.383)	0.849 (0.325)	0.029 (0.405)	1.029 (0.417)
export	0.704*** (0.273)	2.023*** (0.552)	0.665** (0.285)	1.944** (0.553)	0.56* (0.291)	1.752* (0.51)
labinten	-0.693*** (0.264)	0.5*** (0.132)	-0.619** (0.273)	0.538** (0.147)	-0.753*** (0.283)	0.471*** (0.133)
rigid	0.864*** (0.315)	2.372*** (0.747)	0.614* (0.338)	1.848* (0.625)	0.759** (0.347)	2.136** (0.742)
unskillratio1	1.229* (0.651)	3.418* (2.225)	1.305* (0.674)	3.687* (2.484)	1.288* (0.69)	3.624* (2.501)
unskillratio2	1.167 (1.161)	3.214 (3.732)	1.56 (1.320)	4.76 (6.285)	2.118 (1.33)	8.318 (11.061)
TU	1.786*** (0.438)	5.963*** (2.613)	1.782*** (0.448)	5.943*** (2.664)	1.671*** (0.455)	5.316*** (2.419)
Labourcostshare_1314			-0.361 (0.818)	0.697 (0.57)	-0.255 (0.843)	0.775 (0.653)
Emp_1					-1.789*** (0.666)	0.167*** (0.111)
Emp_2					-1.191* (0.636)	0.304 * (0.193)
Emp_3					0	1
_cons	-2.253*** (0.576)	0.105*** (0.061)	-2.361*** (0.62)	0.094*** (0.058)	-0.688 (0.887)	0.503 (0.446)
No. of Observations	361		339		339	
Prob>LR Chi2	0.000		0.000		0.000	
Log Likelihood(Beta)	-185.938		-174.684		-170.361	
Log Likelihood(Zero)	-221.112		-203.851		-203.851	
Likelihood Ratio Index	0.159		0.143		0.164	

Source: ICRIER Survey on Labour Issues in Indian Manufacturing Sector 2015

Note: The numbers in parenthesis are standard errors. ***-Significant at 1% level, **-Significant at 5% level, *-Significant at 10% level

7. Conclusion

In recent years, an interesting feature of the labour market in Indian manufacturing has been an increase in the employment of workers through a contractor under the Contract Labour (Regulation and Abolition) Act, 1970. These workers are employed by the entrepreneurs in the organised sector on temporary contracts through a government-licensed intermediary or contractor. The share of these workers in organised manufacturing sector has increased substantially from 13 percent in 1995 to 34 per cent in 2011 (See India Labour and Employment Report 2014). This increasing contractualisation of the formal sector employment calls for a closer investigation into what are the factors which influence the firms' decision to hire contract workers.

In the present study, we attempted to explore these factors using the responses from a specially commissioned survey of manufacturing firms undertaken by ICRIER, as part of World Bank funded project, 'Jobs and Development: Creating Multi-Disciplinary Solutions' (2014-2016). We estimated a logit model, where the firm's decision, whether or not to hire a contract worker is taken as a binary dependent variable.

The logit model estimation provided some interesting outcomes. We find that the firms with higher turnover are more likely to engage with contract workers. Also, there is a good chance that firms that produce for the export market will hire in contract labour. Further, our results indicate that the presence of trade union activity substantially increase the chances of a firm hiring in contract labour. Also, it is found that firms from labour-intensive industries have a lower proclivity to hire in contract labour than capital-intensive industries.

Two results however, are particularly interesting. Firstly, the issue of labour market rigidity emphasised as legislative variation across states in the bulk of the literature on the Indian labour market. This variable is significant across all specifications and could perhaps be viewed as evidence supporting the view that states favouring protective labour legislation tend to increase the chances of firms, located in such states, hiring in contract labour. The second and one of the most interesting results pertains to skills- the variables 'unskillratio1' and 'unskillratio2' were included as explanatory variables to see whether or not it is more likely that employers that hire in a lot of unskilled (production/non-production) labour will be more likely to hire in contract labour. The linkage is positive and significant in case of unskilled production worker, . The inference we draw is that contract workers are for sure not confined to peripheral activities of firms. This is in contrast to what is widely perceived and emphasised in the literature that contract workers are mostly employed to do peripheral, non-production jobs. The finding indicates that contract labour is being used in doing tasks similar to that done by regular workers, which provides some evidence that contract labour is being used in core activities of production working side by side with regular workers. This, to an extent, support the hypothesis that contract labour is used to substitute regular workers, which in turn suggest that there is *de facto* labour market flexibility contrary to what the existing literature suggests.

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