IMPACT OF LABOUR MARKET REGULATIONS ON INDUSTRIAL PERFORMANCE: EVIDENCE FROM INDIAN MANUFACTURING SECTOR

Ph.D. Thesis

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CANDIDATE'S DECLARATION

I hereby certify that the work which is being presented in the thesis entitled **Impact of Labour Market Regulations on Industrial Performance: Evidence from Indian Manufacturing Sector** in thepartial fulfillment of the requirements for the award of the degree of **DOCTOR OF PHILOSOPHY** and submitted in the **DISCIPLINE OF Economics, Indian Institute of Technology Indore**, is an authentic record of my own work carried out during the time period July, 2012 to June 2015 under the supervision of Dr. Pritee Sharma, Assistant Professor, Indian Institute of Technology Indore.

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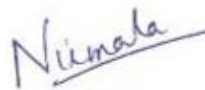IrfanAhmad Sofi
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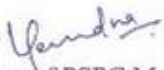
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Dedicated to

My Mother, Hafeeza Bano

And

My Father, Late Abdul Rahman Sofi

SYNOPSIS

Introduction

There have been wider debates among the economists and policy makers regarding the sluggish performance of Indian manufacturing sector over last couple of decades. The so-called structural transformation – major shift in employment towards industrial sector – has not been happening the way envisaged by economists, especially in developing countries like Indian. The share of manufacturing output in total GDP has remained meagerly low. Over the last ten years, there has been a substantial growth in output of manufacturing sector; it has not accompanied employment generation, however. The principal factors that are generally held responsible for hobbling the manufacturing sector, particularly its abysmal record on employment, are (among others) lack of infrastructural facilities and non-availability of credit. However, for last two decades, there has been a considerable shift in the attention of economists and researchers towards investigating the potential impact of labour regulations on employment, output, and labour productivity. Labour laws are widely being cited as one of the principal factors which many researchers and policy makers believe are to be blamed for creating rigidities and holding back employment and productivity growth in industrial business. A substantial body of theoretical literature explains that employment protection legislations (EPL), which give rise to firing costs, can stifle employment generation, output, and productivity growth by creating rigidities (see, for example, Nickel, 1986;Hamermesh, 1993). Besides, there also exists a substantial body of empirical literature from developed as well as developing countries, linking industrial performance with employment protection legislation (EPL).

While being exposed to rising competition in markets due to rising tide of globalization, employers have been vehemently complaining against EPL, citing that it has distorted optimality in production by limiting numerical flexibility (Sunder, 2012). Employers, legitimize their demand for flexibility in hiring and firing, claim that with the advent of globalization and the pressures thereof, firms require employment adjustments all the more to produce an optimal output – to keep up with the volatile market – with optimal level of labour employment. Any level of output produced with sub-optimal level of labour-input is bound to impinge on the efficiency, and thereby, drive the firms out of the competitive markets.

Although a substantial body of empirical-literature has been accumulating internationally and/or nationally– investigating the economic impact of EPL, yet there is a lack of unanimity among the researchers on the extent to which labour laws are responsible for discouraging industrial investment, employment generation, and hurting productivity (Betcherman, 2014). A substantial body of literature disputes the "rigidity argument" on the ground that there are several ways (e.g. employment of non-regular or contract workers) by which employers have been able to evade the brunt of labour laws. There has been a sharp growth in informal employment which is often considered as flexible labor as it most often does not fall under the purview of what is believed to be directly related with rigidity – employment protection legislation. The incidence of contractual and casual employment has increased substantially in OECD countries also (OECD, 2007). Likewise, it has increased four times in Scandinavian countries, and has nearly doubled in European countries over last the two decades (CIETT, 2007). Same is the case with Australia (Ruyter and Burgess, 2003). Coming to India, there has been a sharp growth in informal employment, even in the formal manufacturing sector where the contractual employment has, as per annual survey of industries, increased from 13 % in 1993-94 to 35 % in 2010-11 (Sunder, 2012).

Some researchers argue that, in order to evade labour laws, employers substitute contractual worker for regular worker (Ramaswamy, 1999). The upward trajectory of informal employment growth in Indian manufacturing sector signifies the emergence of a dualism in labour market, with employers enjoying the choice between the two types of labour input. Therefore, many researchers believe that the debate on labor laws and the rigidity argument loses relevance and cannot be palatable in such context (see e.g. Kapoor, 2014). That the spillovers of globalization have rendered many business activities unstable while demand keeps on fluctuating more often than not – is indisputable. And indeed the EPL with its potential of creating rigidities can distort the optimality in production activities with unstable demand in market. However, the alacrity shown by the employers while ushering in non-regular workers in the last two decades does certainly reflect the escalation of employers' appetite for flexibility. In this backdrop, the basic objectives of this study are set as under:

Objectives of the study

- To review the labour laws governing Indian manufacturing sector especially those related with job-security; and also to elucidate the emerging dualism in Indian formal manufacturing sector.

- To investigate if there is any link between Labour laws and informalisation of employment.
- To study the impact of informalisation on productivity.
- To examine the impact of labour laws on total factor productivity.
- To study the link between labour laws and labour productivity.
- To analyze the impact of labour laws on employment.
- To explore whether there is any link between labour laws and informal migrant employment.

Previous literature

Theoretical literature such as Nickel (1986); and Hopenhayn and Rogerson (1993) explain as to how the firing restrictions, which the state can impose in the form of firing costs or severance payments as a job security, can discourage the desired dismissals or firings (in a firm) required to maintain the optimality in the face of economic downturn. Therefore, as per the literature predictions, the actual firings during economic downturn would be lesser than the desired firings. On the other hand, owing to the possibility of having to lay off workers during the prospective economic downturn, the employers, given the firing costs, happen to be rather circumspect in hiring desired number of workers at good times when it is profitable. As a result, during economic upturn the actual hiring, as per these models, may happen to be lower than the desired hiring. Similarly, Garibaldi (1998) has explained how the firing restriction can cause distortion in employment adjustment, thereby leading to inefficient allocation and under-utilization of resources in a firm.

The empirical literature on labour laws has grown rapidly in developing as well as in developed countries in this neo-liberal phase of the global economy. However, it presents a mixed picture (Betcherman, 2014). For example, while studies like Bassanini (2007); OECD (2007); Bassanini et al. (2009); and Cingano et al. (2010) find negative effect of EPL on productivity, several studies find positive effect (see Nickell,1999; Koeniger 2005; Belot et al. 2004). In Indian context, the discourse on labour laws has been growing faster. The labor market in India is considered as highly rigid, with a plethora of pro-worker labour laws in papers governing the hiring and firing policy and worker-employer relations (OECD, 2007). Therefore, researchers utilize data on the Indian formal manufacturing firms to test the theoretical implications of the rudimentary literature underlying the world-wide debate on labour regulations. However, the

empirical findings of the literature in Indian context too are confounding. In his empirical study, Roy (2004) finds that the employment protection legislation or Job security regulations (JSRs) had a very minimal effect on employment adjustment. He divides the sample period into two – before 1975-76 when the job-security regulations were made further stringent, and after it – and finds that rigidity in employment adjustment was not significantly higher post 1975-76. On the other hand, Besley and Burgess (2004); Mitra and Ural (2006) and Dougherty (2013) find in their state-level panel analysis that Job security regulations (JSRs) have negatively affected output and productivity growth in firms. The fundamental assumption of these studies is that the JSRs or EPL create rigidity in employment adjustments; and the relatively lesser productivity in states with stringent pro-worker laws is attributed to the very regulations. The state-wise stringency in JSRs is captured under Leximetrics Approach. Almost a similar approach is followed elsewhere too to measure the economic effects of labor laws, using state or country wise panel analysis (see e.g. Bassanini, 2007).

The basic limitation that features the theoretical as well as empirical literature underlying the debate on labour market regulations is that it has not taken into account dualism in workforce – co-existence of formal worker and informal worker – which has emerged increasingly in most of the contemporary labour markets. Since informal labour (e.g. short-term contract workers), which does not come under the purview of EPL and is therefore considered as flexible input, is argued to be inferior input as compared to regular formal worker (Maiti, 2013); it is necessary for the researcher to give due consideration to the growing trajectory of such workers while investigating the economic effects of EPL. The productivity differential, existing between contractual and regular worker as per the literature, needs to be taken into account to reduce the attribution bias in the empirical findings, especially in the panel analysis involving various states/countries with varying level of EPL and contractual workers.

This study is an attempt to investigate the economic effects of labour laws in dualistic labour market, taking into account the increasing share of contract workers and dwindling number of regular workers. With stringent labour market (OECD, 2007) and the upward trajectory of informalisation cutting across alarming levels, the Indian manufacturing sector serves as a perfect case of dualistic labour market, enabling us to test the tenability of the underlying theoretical literature and check the relevance of the debate on reforming the labour market regulations in a more flexible direction. The hypotheses of this study are as under:

Hypothesis 1

Given the theoretical literature explaining how the EPL, by creating rigidities, can be inimical to the industrial efficiency and growth, there is a tendency that employers would adopt strategies to evade the labour laws. Therefore, it is hypothesized that there is a positive association between labour laws and contractualisation.

Hypothesis 2

Since the wages, employment training, fringe benefits and working conditions of informal workers are abysmally lower in comparison to the formal regular work (Sunder, 2012). It is hypothesized that there is a negative impact of contractualisation on productivity.

Hypothesis 3

Given the fact that the average share of contractual worker, which is flexible, constitutes more than one third of the total number of workers; we hypothesize that the impact of EPL on total factor productivity (TFP) is insignificant.

Hypothesis 4

Likewise, we hypothesize that the impact of EPL on labour productivity and employment is not significant either.

Hypothesis 5

Finally, we hypothesize that labour migration especially the migrant employment on casual basis is positively associated with labour laws.

Data and Methodology

In India, as the subject "labour" is incorporated in the concurrent list of the constitution, the article 246 of the constitution authorizes both the central as well as state governments to legislate over this very subject. Therefore, there exists a notable variation in EPL across various states of India. To capture the impact of the EPL on industries in Indian manufacturing sector, we exploit the state level variation in these laws. To use the state-level variation in empirical econometrics model, we construct an index (by following Gupta et al., 2009) called employment protection legislation index (EPLI) showing the stringency of pro-worker labour laws across states. The index is constructed by drawing upon the information available in three different studies in the literature based on Indian context – Besley and Burgess (2004), Battacharjea (2006), and OECD (2007). Under lexemetrics approach, we use the so-called majority principle on the available information on stringency of EPL. The main advantages of deriving the regulatory environment

using majority principle is that it weeds out the limitations or errors subject to individual measures unless systematically applicable to all or two of them. More importantly, while the information on labour laws in Besley and Burgess (2004) is available only for the period 1997 to 1992, the OECD (2007) is the latest one taking into account the information on implementation and enforcement machinery of the labour laws. Therefore, under majority principle, the changes in the labour laws between 1992 to 2007-08 are also taken into account. However, there has been a very limited amendment activity between 1992 and 2007-08, assuaging our concerns regarding the validity of our EPL index (Gupta et al., 2009). Although it is possible to derive the EPL index for fifteen states of India while applying the majority rule, the study restricts the number of states to thirteen only owing to a huge number of missing observation on contractual employment for two states – Bihar and Assam. Likewise, we limit the sample size on industries to twenty-eight only to maintain the reliability of the study, which otherwise would be susceptible to the very large number of missing observations on contractual employment, which is one of the important variables in our study. The previous literature, because it ignores the dualism and thus contractualisation, uses relatively larger sample size on states as well as industries to analyze the impact of EPL on productivity, employment, and output, as it does not use the data on contractual employment (see e.g. Besley and Burgess, 2004; Mitra and Ural, 2008; Gupta et al, (2009).

In this study, as we hypothesize negative impact of contractualisation (or informalisation) on productivity in industries, we thereby raise a crucial empirical issue which has been ignored in the existing literature; it is the so-called productivity differential between regular workers and contractual workers. Our study goes on further to explaining that in empirical estimation of the impact of EPL on productivity in industries across various states with varying levels of contractual employment, if the productivity differential is not controlled for, the credibility of the results may be questionable. Unlike earlier literature, with the help of interaction effects, we manage to control for productivity differential as well as the amount of flexibility that employers enjoy by using the contractual employment. Our study, like most of the existing literature based on Indian context, utilizes three-dimensional panel data. We have two cross section dimensions – industry and states – and time dimension. This kind of data set enables us to carry out the analysis with more disaggregated information than it would be possible with a mere state level panel data. Most of our regressions are estimated using fixed effect strategy as the test for choice

between random effect and fixed effect model turns out to be in favour of the latter model. The use of fixed effect strategy is also underscored by the fact that our analysis involves various industries and various states, with each state differing significantly with the rest in some inherent characteristics and policy orientation. In empirical estimation, we capture the impact of EPL by interacting EPLI index, which is time-invariant, with the appropriate time-variant variables.

We also raise endogeneity concerns in our empirical model with sufficient theoretical support. To overcome the endogeneity problem, we follow instrumental variable two stage least square (IV 2SLS). For appropriate instruments, we use data on share of electoral seats occupied by various political party groups. The validity of the instruments (exclusion restriction) is tested by estimating the Sargan statistics. The study estimates the clustered standard errors to deal with the potential serial correlation problem. The problem of multi-colinearity is checked wherever required. Labour productivity is measured by Real output per worker, and total factor productivity (TFP) is calculated by using Data Envelopment Analysis (DEA). Among many advantages of DEA, one and important thing is that it takes into consideration returns to scale in calculating efficiency, allowing for the concept of increasing or decreasing efficiency based on size and output levels. And moreover, since our study is based on Industry level data, DEA is relatively more suitable. To calculate total factor Productivity (TFP), In order to avoid the attribution bias, we use a set of appropriate state-specific as well industry-specific control variables apart from including the fixed effects in most of our regressions. We primarily use 3-digit annual survey of industries (ASI) data. The data has been collected from Ministry of Statistics and Programme Implementation (MOSPI) Central Statistical Organization (CSO), and Indian Labour Bureau Government of India, Economic and Political Weekly (EPW) Research Foundation. Whole Sale Price Index (WPI) and Consumer Price Index (CPI) are used to convert the data on some variables into constant terms. The data on WPI and CPI is collected from Reserve bank of India (RBI) Website. And finally, the data on electoral share of seats by various political parties in the state legislator is downloaded from the website of Election Commission of India.

Empirical Results (Brief Summary)

We begin our empirical analysis with investigating the link between labour laws and contractualisation. Our results (presented briefly in Table 1) show that the incidence of informal

employment is directly related with EPL and volatility, suggesting that among other factors, evading the labour laws is one of the reasons of increasing trend in informal employment. Besides, the results also show that with the increase in labour bargaining power, employer tends to substitute informal labor for the formal labor. The results are robust to endogeneity correction. Then, we examine the effect of labour laws on total factor productivity. Our results (presented in Table 2) indicate that EPL does not affect TFP. We do not find significant impact of EPL even in highly volatile industries in which the need of flexibility is relatively higher. Our findings suggest that firms do (already) enjoy substantial flexibility due to dualism in the workforce. Likewise, our study finds that that the impact of employment protection legislation is negative on labour productivity (see Table 3). However, the impact is insignificant as suggested by the insignificant (though negative) coefficient on EPL index in labour productivity regression. Interestingly, we find negative impact of contractualisation on productivity (see Table 3). The surprising finding that our study unfolds is the negative impact of EPL on employment of industries operating in states with stringent labour laws (see Table 4).

Table 1: Impact of EPL, labour bargaining power, and Volatility on informalisation – 2SLS results (Main findings)

Explanatory variables	2SLS results	2SLS results
Constant	-7.907***	-7.921***
	(1.896)	(1.895)
Ratio of Strikes to Lockouts (log)	0.283***	0.280***
	(0.092)	(0.091)
Capital-Labor ratio (log)	-0.137***	-0.113**
	(0.043)	(0.045)
K-L Ratio*EPLI	----	0.105**
	----	(0.051)
High Volatility	0.419***	0.775***
	(0.174)	(0.214)
Year effects/Industry effects/state effects	Yes	yes
R-squared	0.681	0.682
No. of Observations	2772	2772
Sagan test (p-value)	0.242	0.230

Dependent variable: Ratio of number of control workers to total number of workers.
Note: (a) Figures in parenthesis represents robust standard errors (b) *=p<0.10, **=p<0.05, ***=p<0.0 (c) Three control variables are included in these two regressions: (i) Development expenditure per capita per million population (ii) Per capita Net State Domestic Product (iii) industry specific Real Output.

Finally, while exploring the link between labour laws and state-level inward labour migration, we find that industries operating in states with relatively rigid labour market, register greater use of migrant worker. And interestingly, in the states with relatively rigid labour laws, share of migrant workers on casual basis is found higher, which suggests that employers hire the migrant

casual workers to circumvent the labour laws (see Table 5). Statistically, the association between labour laws and casual migrant employment is significantly positive.

Table 2: Impact of EPL and Informalisation on Total Factor Productivity (TFP) – 2SLS results and Robustness checks (Main findings).

Explanatory Variables	2SLS	2SLS	2SLS
Constant	-1.211*	-1.200*	-1.556*
	(0.714)	(0.716)	(0.806)
Log Ratio of PW/TW (instrumented)	0.173**	0.167***	0.023***
	(0.070)	(0.065)	(0.007)
Log (Instrumented PW/TW)*EPLI	----	-0.0.15	----
	----	(0.015)	----
High Volatility	-0.135**	0.134***	---
	(0.071)	(0.071)	---
Log PW/TW*High Volatility*EPLI	---	0.008	---
	---	0.019	---
Log EPLI (OECD)*PW/TW	----	----	-0.002
	----	----	(0.005)
Industry/state/year dummies	Yes	Yes	Yes
Overall R^2	0.747	0.734	0.782
Sargan test (p-value)	0.628	0.634	0.630

Dependent variable: Log Total Factor Productivity (TFP)

Note: (a) Figures in parenthesis represent robust standard errors   (b) *=p<0.10, **=p<0.05, ***=p<0.01 (c) Four control variables are included in these regressions: (i) Log fixed capital (lag1) (ii) Log per capital electricity (lag2) (iii) Log man-days lost due to strikes and lockouts (lag2) and (iv) log per capital development expenditure per million population and (v) Log per capita net state domestic product.

Table 3: Impact of EPL on labour productivity -- 2SLS results (Main findings)

Explanatory variables	2SLS results	2SLS results
Constant	1.100***	1.346***
	(0.309)	(0.292)
Log Ratio of P.W/C.W	0.183**	0.195***
	(0.093)	(0.092)
Log P.W/C.W(estimated)*EPLI	----	-0.072
	----	(0.118)
State/industry/year dummies?	Yes	Yes
Overall R^2	0.903	0.913
Sargan test (p-value)	0.644	----

Dependent variable: labour productivity (real output per worker). Note: (a) Figures in parenthesis represent robust standard errors clustered at industry-by-state level. However, in regression 1 we could not cluster the standard errors, because it was impossible to generate Sargan test score with clustered standard errors. And in regression 2 we could not generate Sargan test score because of interaction of the "instrumented P.W/CW" and EPLI. In this regard, since instruments were found to be valid in regression 1, so there is no point in doubting their validity in regression 2, which is almost the same except the interaction. (b) *=p<0.10, **=p<0.05, ***=p<0.01 (c) Controls included in these regressions are fixed capital per worker, strikes and lockouts, road density, power, and development expenditure.

Table 4: Impact of employment protection on employment of workers (Main Findings)

Variables	(I)	(II)
Constant	1.294**	1.406***
	(0.599)	(0.635)
Time-variant Dummy (for Labor	0.118***	----
Intensive Industries)	(0.010)	----
Labor Intensive Ind. * EPLI	----	-0.037***
	----	(0.018)
Industry/state/year effects	Yes	Yes
No of Obs.	3276	3276
Overall R^2	0.809	0.765

Dependent Variable: Employment of workers.

Note:(a) Figures in parenthesis represents robust standard errors clustered at industry-by-state level, and (b) *=p<0.10, **=p<0.05, ***=p<0.01

(c) Three industry specific controls (wage cost, real output, and fixed capital) and three state-specific controls (Development expenditure, electricity, and net state domestic product) are included in these regressions.

Table 5: Interstate migration and labour laws – Two-dimensional cross-section regression estimates (Main findings)

Explanatory Variables	Dependent Variable: Share of interstate migrant informal workers in formal manufacturing sector
Constant	-2.612**
	(1.271)
EPLI	0.100***
	(0.029)
Human development index	0.885*
	(0.522)
Share of urban population	-0.224
	(0.259)
Ratio of female to male Labour force participation rate	0.267*
	(0.137)
Share of manufacturing and construction sector workers to total workers	0.190
	(0.296)
State level Male unemployment rate	-5.732**
	(2.293)
GSDP Deflator	0.025**
	(0.012)
Per capita development expenditure	-0.000**
	(0.000)
Road length per 100sqr km's	0.009**
	(0.005)
Observations	140
R-squared	0.198
F-statistic	5.276

Note: (a) Figures in parentheses represent robust standard errors (b) *** p<0.01, ** p<0.05, * p<0.1

Conclusion

As the industrial business struggles to maintain its growth at higher trajectory, the researchers and policy-makers are raising questions regarding the relevance of EPL which analysts claim

does neither ameliorate the plight of the workers nor let the business grow. For the last two decades, employers have been up against employment protection legislations (EPLs), claiming that such pro-worker labor laws hamper investment and hurt productivity by creating rigidity in business. The discourse on EPL has been growing in developing as well as in developed countries. However, the empirical literature measuring the economic effects of EPL on industrial performance, offers an inconclusive picture. Surprisingly, despite the substantial body of contract labour laws prohibiting contractual employment in core activities of the business, the incidence of contractual employment has registered an unprecedented growth over the last two decades, cutting across non-core as well as core activities. Though alarming, the uncontrolled rise in informalisation has not received adequate attention of policy makers. What is more worrying is the fact that there are evidence suggesting that the overdependence of informal employment may impinge on efficiency and productivity growth of industries, and thus drive them out of the competitive markets, in the long run.

The findings of this study suggest that in the contemporary labour markets, due to growing dualism in workforce which has been made possible by the eroding implementation and poor enforcement of the pro-worker labour laws, there exist a substantial flexibility for the firms to use the labour freely. Therefore, the abrogation of pro-worker labour laws does not seem to be an answer to the sluggishness of the Indian manufacturing sector. A positive association between labour laws and contractualisation which is found in this study implies that employers evade the former by using the contract workers. Since contractual workers' average daily earnings and other employment related befits are found to be significant lower than regular workers, it implies that the principal motive of contractualisation is to reduce the bargaining power of workers. And therefore, the abrogation of job security is likely to increase informalisation further, which has serious repercussions on the welfare of workers. There is no doubt that the number of labour laws governing the Indian manufacturing sector is unnecessarily large. However, the Indian state seems to have failed in translating the laws in papers into actual social security. Indeed, there is a need of rationalization of labour laws to bring them to their optimal size, but the focus of the ongoing debate on labour regulations must be on how to combat the informalisation and how to overhaul the implementation machinery to bring about efficient enforcement.

List of Publications

Papers in Refereed Journals

- Sofi, I.A., Sharma, P., Khan, M.I. (2015). Informalisatoin of migrant workers: Has the Indian State failed to translate the pro-worker labour laws into a meaningful social security? *Asian Journal of Law and Economics.* **Sage Publication** (Accepted with minor revision).

- Sofi, Irfan Ahmad and Sharma, Pritee. (2015). Does employment protection legislation matter in dualistic labour market? Panel evidences from Indian manufacturing sector. *Labor Studies Journal* 40(2): 1-19.**Sage Publication.**

- Sofi, Irfan Ahmad and Sharma, Pritee. (2015). Labour regulations, contractualisation, and industrial performance: three-dimensional panel evidences from Indian manufacturing sector. *South Asia Economic Journal* 16(1): 122-144. **Sage publication.**

- Sofi, Irfan Ahmad and Sharma, Pritee. (2015). Labour laws and informalisation of employment: evidences from formal Indian manufacturing sector. *Asian Journal of Law and Economics* 6(1): 65-84. **De Gruyter, Germany.**

- Qayoom, K., Ramachandran, M., and Sofi, I. 2014. Determinants of FDI Inflows to Developing Countries: A Panel Data Analysis. *Journal of International Business and Economy* 14(2): 29-47, 2013.

Papers Presented in international/national Conferences

- Does employment protection legislation matter in dualistic labour market? panel evidences from Indian manufacturing sector. **Young Scholar's seminar organized by CESP, Jawaharlal Nehru University**, New Delhi 10-12 March 2015

- Labour laws and informalisation of employment: panel evidences from Indian formal Indian manufacturing sector. **51st annual conference of the Indian Econometric Society (TIES)** at Punjabi University, Patiala 12-14 December 2014.

- Labour Regulations, Contractualisation, and Labour Productivity: Panel Evidences from Indian formal manufacturing. 9th International Conference on Public Policy and Management, 11-15 August 2014**, Indian Institute of Management Bangalore.**

- Impact of Labor Market Regulations on Total Factor Productivity: Evidence from Indian manufacturing. Two day National Seminar on Applications of Panel Data, **Center of Economic and Social Studies (CESS), Hyderabad, India.**

- Impact of Labor Market Regulations on Industrial Performance: Three-dimensional Panel Evidences from Indian Manufacturing Sector" 6th International Conference on Excellence in Research and Education, 8-11 May 2014 **Indian Institute of Management Indore, MP.**

- Does Labour Regulation hurt Industrial performance: Critical Review of Literature, 55th ISLE conference, 16-18 December 2013, **JawaharLal Nehru University, New Delhi.**

Table of Contents

List of Tables

List of Figures

ACRONYMS

ASI – Annual Survey of Industries
CIETT – International Confederation of Private Employment
    Agencies
CPI – Consumer Price Index
CPI-IW – Consumer Price Index for Industrial Workers
CLA – Contract Labour Act
CMIE – Centre for Monitoring Indian Economy
CTUs – Central Trade Unions
CSO – Central Statistical Organization
DEA – Data Envelopment Analysis
EPL – Employment Protection Legislation
EPLI – Employment Protection Legislation Index
FE – Fixed Effect
FSLS – First Stage Least Square
GDP – Gross Domestic Product
GSDPD – Gross State Domestic Product Deflator
IDA – Industrial Disputes Act
IV – Instrumental Variable
IV 2SLS – Instrumental Variable Second Stage Least Square
2SLS – 2nd (Second) Stage Least Square
MOSPI – Ministry of Statistical and Programme Implementation
NCEUS – National Commission for Enterprises in Unorganized Sector
NIC – National Industrial Classification
NSDP – Net State Domestic Product
NSSO – National Sample Survey Organization
NSDP – Net State Domestic Product
OECD – Organization for Economic Co-operation and Development
OLS – Ordinary Least Square
PCTEO – Planning Commission's Report of the Task Force on
    Employment Opportunities
PCNSDP – Per Capita Net State Domestic Product
RBI – Reserve Bank of India
RE – Random Effect
SNCL – Second National Commission for Labour
TFP – Total Factor Productivity
WPI – Whole Sale Price Index

Chapter 1

Introduction

1.1. Background of the Study

There have been wider debates among the economists and policy makers regarding the sluggish performance of Indian manufacturing sector over last couple of decades. The so-called structural transformation – major shift in employment towards industrial sector – has not happened the way envisaged by economists, especially in developing countries like Indian. The share of manufacturing output in total GDP has remained meagerly low. For the last one decade there has been a substantial growth in output in manufacturing, it has not accompanied employment generation, however. The principal factors held responsible for hobbling the manufacturing sector, particularly its abysmal record on employment, among others are lack of infrastructural facilities and non-availability of credit (see e.g. Gupta et al., 2009. However, for last two decades there has been a considerable shift in the attention of economists and researchers towards investigating the potential impact of labour regulations on employment, output, and labour productivity. Labour laws are widely being cited as one of the principal factors which, many researchers and policy makers believe, are to be blamed for creating rigidities and, thereby, holding back employment and productivity growth in industrial business. A substantial body of theoretical literature explains that employment protection legislations (EPL), which give rise to firing costs, can stifle employment generation, output, and productivity growth by creating rigidities (see, for example, Nickel, 1986; Hamermesh, 1993). Besides, there also exists a substantial body of empirical literature from developed as well as developing countries, linking industrial performance with employment protection legislation (EPL).

While being exposed to international competition by the rising tide of globalization, employers have been vehemently complaining against EPL, citing that it has distorted the optimality in production by limiting numerical flexibility (Sunder, 2012). Legitimize their demand for flexibility in hiring and firing, employers claim that with the advent of globalization and the pressures thereof, firms require employment adjustments all the more to produce an optimal output – to keep up with the volatile market – with optimal level of labour employment.

Although a substantial body of empirical-literature has been accumulating internationally and/or nationally – investigating the economic impact of EPL, yet there is a lack of unanimity among the researchers on to what extent can labour law be hold responsible for discouraging industrial investment, employment generation, and hurt productivity (Betcherman, 2014). A substantial chunk of literature disputes the "rigidity argument" on the ground that there are ways by which employers have been able to evade the brunt of labour laws, such as employment of non-regular or contractual workers. Besides, a glaring discrepancy between de jure laws and their actual implementation and enforcement (de facto) do undermine the real job-security for the workers. There are evidences of significant reforms by "stealth" which, notwithstanding EPL, rendered 1.1 million workers jobless during 1995-96 to 2000-01 in organized manufacturing sector, indicating the ineffectiveness of job security legislations (Nagaraj, 2004). There has been, both in developed and developing countries, a sharp growth in informal employment, often considered as flexible labor as it most often does not fall under the purview of what is believed to be directly related with rigidity – employment protection legislation. The incidence of contractual and casual employment has increased substantially in OECD countries also (OECD, 2007). Likewise, it has increased four times in Scandinavian countries, and has nearly doubled in European countries over last two decades (CIETT, 2007). In Asia Pacific, the growing incidence of informal employment notably marks the upward

dualistic trajectory of labor market. Australia, for example, has witnessed spiraling growth in casual employment, making it one of the countries in OECD with largest share of casual employment (Ruyter and Burgess, 2003). Coming to India, there has been a sharp growth in informal employment, even in the formal manufacturing sector where the contractual employment has, as per annual survey of industries, increased from 13 % in 1993-94 to 35 % in 2010-11 (Sunder, 2012).

Given the fact that contractual employment does not fall within the ambit of EPL, many researchers argue that employers have managed to circumvent the labour laws by substituting the contractual workers for regular workers (Ramaswamy, 1999). This is a line of argument that seeks to reckon the "employers' demand for flexibility" as a ploy to make a further dent in labour bargaining power and thereby squeeze surplus out of workers. The upward trajectory of informal employment growth, prevailing ubiquitously, signifies the emergence of a dualism in labour market featured by spiraling growth in non-regular workers and dwindling share of regular workers, with employers enjoying the choice between the two types of labour input. Therefore, many scholars believe that the debate on labor laws and the rigidity argument loses relevance and cannot be palatable in the context of increasingly emerging dualistic labor market (see e.g. Kapoor, 2014). That the spillovers of globalization have rendered many business activities unstable, while demand keeps on fluctuating more often than not, is indisputable. And indeed the EPL, with its potential of creating rigidities, can distort the optimality in production activities with unstable demand in market. However, the alacrity shown by the employers while ushering in droves of non-regular workers in the last two decades does certainly reflect the escalation of employers' appetite for flexibility.

The basic limitation common to the theoretical literature referred above, which underlies the debate on EPL is the implicit assumption that EPL

covers all the workers working in a firm. In other words, these models ignore the co-existence of formal workers falling under the ambit of EPL and informal workers which do not fall under its purview. Therefore, the main objective of this study is to examine the impact of the EPL under dualistic labour market. With stringent labour market (OECD, 2007) and the upward trajectory of informalisation cutting across alarming levels, the Indian manufacturing sector serves as a perfect case for studying the impact of pro-worker employment protection legislations on industrial performance in dualistic context of the labour market. The objectives of this study are set as follows:

1.2. Objectives of the study

- To review the labour laws governing Indian manufacturing sector especially those related with job-security; and also to elucidate the emerging dualism in Indian formal manufacturing sector.

- To investigate if there is any link between Labour laws and informalisation of employment.
- To study the impact of informalisation on productivity.

- To examine the impact of labour laws on total factor productivity.

- To study the link between labour laws and labour productivity.

- To analyze the impact of labour laws on employment.

- To explore whether there is any link between labour laws and informal migrant employment.

1.3. Present situation of labour regulations in India

In India, there is plethora of labour laws regulating the worker-employer relations in the manufacturing sector. Most of the Indian labour laws are contained in (i) Employment (standing Order) Act 1946 (ii) Industrial Disputes Act 1947 (iii) Minimum Wages Act 1948 (iv) Employees State Insurance Act 1948 (v) Factories Act 1948 (vi) Employees Provident Fund and Miscellaneous Provisions Act 1952 (vii) Contract Labour (Regulation

and Abolition) Act 1970 (viii) Payment of Bonus Act 1965 (ix) Payment of Gratuity Act 1972. Of these, the most contentious are those which are related to job security or employment protection. The fundamental aim of EPL is to extend job security to workers by governing the hiring and firing in firms. Most of the job security related provisions are contained in Industrial Disputes Act (IDA) 1947; Industrial Employment (Standing Order) Act 1947; and Contract Labour (Regulation and Abolition) Act, 1970. Chapter V-B of IDA, which applies on firms with at least hundred workers, makes it compulsory for the employers to seek a formal permission from the government before retrenching workers or closing down a firm; it is believed that employers have to go through a lengthy procedure to finally get the permission from the government (Bhattacharjea, 2006). Besides, under section 25-B of the Industrial Disputes Act, a worker can seek regularization of his/her service if it works continuously for more than 240 days. And under section 25-F of Industrial Disputes Act – which is applicable to firms employing between 50-100 workers – the employer has to pay them a "severance cost" besides issuing a notice on retrenchment. On the other hand, the Contract Labor Act 1970 legalizes the use of contract workers in non-core activities. However, the Section 10 (1) of the Act provides for "prohibition and abolition" of contractual employment, as and when required. Meanwhile, one of the principal unfulfilled demands of labor union is the "automatic absorption upon abolition" (Sunder, 2012). In other words, the trade unions demand that as and when the government abolishes the contract employment, the workers must be absorbed and automatically regularized. The employers, however, have managed to fight off this demand of trade unions thus far. In addition, under rule 2 (V)-(a) of the Contract Labour Act, the employer is required to pay the equal wages to contractual and regular workers if they perform the same type of work.

Recently, the National Democratic Alliance (NDA) government has pushed through a "proposal" to amend the existing labour legislations

which the Central Trade Unions (CTUs) called as a "unilateral" move by the current dispensation to paving the way for employers enabling them retrench or lay off workers at will and pursue large-scale contractualisation. The reformists posit the government's step to amend the pro-worker laws a need of the hour to put the manufacturing at higher growth trajectory. It is expected that flexibility in employment adjustment and ease-to-do-business would stimulate the investment in Indian manufacturing and thereby would help the industries grow faster and generate employment opportunities. However, the expectation that the abrogation of job security regulations would boost productivity, employment generation and investment growth is based on the assumption that EPL has created rigidity, which has impinged upon the efficiency and productivity in firms. This line of argument has been echoed by the Indian state as well in the recent years. However, several questions start stemming when we take a look at the incidence of contract workers, which is technically a flexible input because it does not fall under the purview of EPL. The questions can be put forth as under:

1.4.   Research questions and Hypotheses

- Is Indian labour market rigid?

- Does EPL create rigidity in Indian manufacturing sector and how far have employers managed to evade it?

- Is informalisation, which is rapidly growing in Indian manufacturing sector, linked with labour laws?

- Does EPL affect productivity and employment generation in firms?

- Does contractualisation benefit firms?

Looking at the incidence of contractual employment in the manufacturing sector, it becomes rather difficult to subscribe to the rigidity argument in a

logical manner. However, the question then arises is that why contractualisation? Thus, all these questions call for a comprehensive investigation of each and every aspect of the ongoing debate on labour regulations. In an attempt to answer the questions raised above, we formulate and test several hypotheses, which are given as under:

Hypothesis 1

Given the theoretical literature explaining how the EPL, by creating rigidities, can be inimical to the industrial efficiency and growth, there is a tendency that employers would adopt strategies to evade the labour laws. *Therefore, it is hypothesized that there is a positive association between labour laws and contractualisation.*

Hypothesis 2

Since the wages, employment training, fringe benefits and working conditions of informal workers are abysmally lower in comparison to the formal regular work (Sunder, 2012). *It is hypothesized that there is a negative impact of contractualisation on productivity.*

Hypothesis 3

Given the fact that the average share of contractual worker, which is flexible, constitutes more than one third of the total number of workers; *we hypothesize that the impact of EPL on total factor productivity (TFP) is insignificant.*

Hypothesis 4

Likewise, *we hypothesize that the impact of EPL on labour productivity and employment is not significant either.*

Hypothesis 5

Finally, *we hypothesize that labour migration especially the migrant employment on casual basis is positively associated with labour laws.*

In India, as the subject "labour" is incorporated in the concurrent list of the constitution, the article 246 of the constitution authorizes both the central

as well as state governments to legislate over this very subject. Therefore, there exists a notable variation in EPL across various states of India. To capture the impact of the EPL on industries in Indian manufacturing sector, we exploit the state level variation in these laws. To use the state-level variation in empirical econometrics model, we construct (by following the classification in Gupta et al., 2007) an index called employment protection legislation index (EPLI) showing the stringency of pro-worker labour laws across states. The index is constructed by drawing upon the information available in three different studies in the literature based on Indian context – Besley and Burgess (2004), Battacharjea (2006), and OECD (2007). Under leximetrics approach, we use the so-called majority principle on the available information on stringency of EPL. The main advantages of deriving the regulatory environment using majority principle is that it weeds out the limitations or errors subject to individual measures unless systematically applicable to all or two of them. More importantly, while the information on labour laws in Besley and Burgess (2004) is available only for the period 1997 to 1992, the OECD (2007) is the latest one taking into account the information on implementation and enforcement machinery of the labour laws. Therefore, under majority principle, the changes in the labour laws between 1992 to 2007-08 are also taken into account. However, there has been a very limited amendment activity between 1992 and 2007-08, assuaging our concerns regarding the validity of our EPL index (Gupta et al., 2009). Although it is possible to derive the EPL index for fifteen states of India while applying the majority rule, we restrict the number of states to thirteen only in most of our analysis (except when mentioned otherwise) owing to a huge number of missing observation on contractual employment for two states – Bihar and Assam. Likewise, we limit the sample size on industries to twenty-eight only to maintain the reliability of the study, which otherwise would be susceptible to the very large number of missing observations on contractual employment, which is one of the important variables in our

8

study. The previous literature, because it ignores the dualism and thus contractualisation, uses relatively larger sample size on states as well as industries to analyze the impact of EPL on productivity, employment, and output, as it does not use the data on contractual employment (see e.g. Besley and Burgess, 2004; Mitra and Ural, 2008; Gupta et al, (2009).

1.5. Importance and contribution of this study

The study is important for several reasons. Fundamentally, our study is designed to draw any argument in connection to (or investigate) the impact of employment protection legislations, keeping in view the existence of dualistic labour market. Under dualistic context of labour market, we hypothesize negative impact of informalisation in general and contractualisation in particular on productivity of firms. Thereby, we expand the scope of investigation of the ongoing flexibility debate and try to establish its implications on employers and workers. The hypothesis of negative impact of contractualisation is bound to have notable implications on the empirical methodology for measuring the impact of EPL on industrials performance. In this regard, we raise a critical issue of productivity differential that exists between informal workers and formal regular workers. Our study goes on further to explaining that in empirical estimation of the impact of EPL on productivity in industries across various states with varying levels of contractual employment, if the productivity differential is not controlled for, the credibility of the results may be questionable. Unlike earlier literature, with the help of interaction effects we manage to control for the productivity differential as well the flexibility enjoyed by the employers by using contractual employment. Given our first hypothesis that employers may tend to substitute the formal worker with the informal to evade the labour laws, we argue that the states with rigid labour market are likely to registrar relatively higher use of contractual employment. And since contractual employment may have a negative impact on productivity, as we hypothesized above; therefore, the industrial productivity is likely to be relatively lower in rigid

9

states. We further argue that, on controlling the productivity differential between contractual worker and regular worker while analyzing the net impact of EPL, the inherent (net) impact of the EPL may turn out to be lesser as compared to what the earlier literature has shown out.

We also raise endogeneity concerns in our empirical model. To overcome the endogeneity problem, we follow instrumental variable two stage least square (IV 2SLS). For appropriate instruments, we use data on share of electoral seats occupied by various political party groups. The validity of the instruments is tested by estimating the Sargan statistics. The study estimates the clustered standard errors to deal with the potential serial correlation problem. In order to avoid the attribution bias, we use a set of appropriate state-specific as well industry-specific control variables apart from including the fixed effects in most of our regressions.

Our study is important because it contributes to theoretical as well as empirical literature. As mentioned earlier, the theoretical models documenting, though ambiguously, the impact of EPL ignore the dualism in labour market, possibly because the emergence of dualism was not so palpable in labour markets especially in the developed countries at the time these theories were propounded. The fact of the matter is that dualism is ubiquitously emerging, with dwindling share of regular workers and increasing share of informal workers featuring the trajectory of new trends in labour markets. This phenomenon is rather alarming in developing countries, where the workers, amidst weak implementation of regulatory mechanism, are more vulnerable to exploitative tendencies of employers. This study, unlike earlier studies, investigates as to whether the drive to informalisation, which is purportedly motivated by the evasion of labour laws, augurs well or ill for the efficiency and thus competitiveness of the industries. The study also raises a very important empirical issue – productivity differential. Since most of the literature, investigating the impact of EPL, uses panel data involving different regions, our study adds to the literature by explaining as to how the estimates may be biased if the

productivity differential between informal worker and formal worker is not controlled for, more so when the incidence of the informalisation is largely prevailing across various regions.

Further, having mentioned earlier the importance of capitalizing on the fixed effect model specification in estimating the impact of EPL, our study adds in the literature by showing as to how the time-invariant EPL index could be used in this specification with the help of interaction with the relevant variables. Our study also analyses, in the context of labour laws, the impact of market volatility generally put forth by employers as a justification for abrogation of pro-worker employment protection legislations. Finally, this study also adds in the literature by analyzing what has been ignored in the literature – link between labour laws and labour migration. Linking labour laws and labour migration is important because the latter does offer the route for employer to evade the laws, substantiated by our hypothesis that migrant worker is likely being employed as non-permanent worker just to circumvent the obligation of providing the job-security to workers. Thus, this study is a significant contribution to the literature both from theoretical as well as from empirical standpoint.

Our study utilizes the data on twenty eight (3-digit) industries from Indian manufacturing sector across 13 major states of India. Based on our EPL index (EPLI), we have three categories of states – rigid, less rigid (neutral), flexible. Among rigid states, we have West Bengal, Orissa and Maharashtra; among less rigid (neutral) states, we have Gujarat, Haryana, Kerala, Madhya Pradesh and Punjab; and among flexible states, we have Rajasthan, Tamil Nadu, Utter Pradesh, Andhra Pradesh, and Karnataka. Our study, like most of the existing literature based on Indian context, utilize three-dimensional panel data. We have two cross section dimensions – industry and states – and time dimension. This kind of data set enables us to carry out the analysis with more disaggregated information than it would be possible with a mere state level panel data.

Most of our regressions are estimated using fixed effect strategy as the test for choice between random effect and fixed effect model shows the latter model fits the data well. The use of fixed effect strategy is also underscored by the fact that our analysis involves various industries and various states, with each state differing significantly with the rest in some inherent characteristics and policy orientation. In empirical estimation, we capture the impact of EPL by interacting the EPLI index, which is time-invariant, with the appropriate time-variant variables.

1.6. Data Source and limitation of this study

We primarily use 3-digit annual survey of industries (ASI) data (except when mentioned otherwise). The data used in this study has been collected from Ministry of Statistics and Programme Implementation (MOSPI) Central Statistical Organization (CSO), and Indian Labour Bureau Government of India, Economic and Political Weekly (EPW) Research Foundation. Whole Sale Price Index (WPI) and Consumer Price Index (CPI) are used to convert the data on some variables into constant terms. The data on WPI and CPI is collected from Reserve bank of India (RBI) Website. The data on electoral share of seats by various political parties in the state legislator is downloaded from the website of Election Commission of India. Finally, the data on migration is taken from National Sample Survey Organization (NSSO). The main limitation of this study is that because of the non-availability of relevant data, we could not directly measure the rigidity effects of employment protection legislation (EPL). Instead, we measure the productivity and employment effects etc of EPL, with the assumption that a significant negative "productivity and employment effects" of the job security laws would indicate the presence of significant rigidity effects of EPL, and vice versa.

Chapter 2

Indian Labour Law

2.1. Introduction

Indian labour law refers to laws regulating labour in India. Labour matters, which are listed in the concurrent list of the Indian Constitution, are under the jurisdiction of both central and state governments. Thus, both the central government and state governments are competent to enact laws on labour relations and issues related to employment. Most of the debatable labour laws in India are basically contained in (i) Employment (standing Order) Act 1946 (ii) Industrial Disputes Act 1947 (iii) Minimum Wages Act 1948 (iv) Employees State Insurance Act 1948 (v) Factories Act 1948 (vi) Employees Provident Fund and Miscellaneous Provisions Act 1952 (vii) Contract Labour (Regulation and Abolition) Act 1970 (viii) Payment of Bonus Act 1965 (ix) Payment of Gratuity Act 1972.

Of these Acts, the most controversial ones that have been debated in the existing literature are, Industrial Disputes Act (IDA), 1947; and Contract Labour (Regulation and Abolition) Act 1970. Therefore, in the rest part of this chapter, we give a detailed account of the IDA 1947 and Contract Labour Act 1970. The Indian Labour Laws contained in the aforementioned Acts are discussed in great detail in several books and websites; but in this chapter, we describe the provisions contained in the Industrial Disputes Act (IDA), 1947 and the Contract Labour (Regulations and Abolition) Act 1970.

2.2. A: Industrial Disputes Act 1947

Industrial Disputes Act 1947 came into force on April 1, 1947. It is a central act and extends to the whole of India, but limited to organized sector only. It makes the provision for the investigation and settlement of industrial disputes, and other purposes falling in the arena of employer-

employee relations. The fundamental aim of the Industrial disputes Act (IDA) 1947 is to ensure Industrial peace and harmony by providing machinery and procedure for the investigation. As per the judgments by the Supreme Court, given from time to time, the main objectives of the Industrial Disputes Act (IDA) 1947 as follows:

- To ensure harmonious relations between employers and employees, and get the industrial disputes settled through competent adjudicatory authorities.
- To prevent and discourage illegal strikes and lockouts.
- To provide compensation to workers on lay-offs, retrenchment, illegal dismissal and victimization.
- To facilitate collective bargaining and support conciliation.
- To ameliorate the condition of workers in an industry.

The Act was made slightly more stringent by an amendment in 1976 when chapter V-B was introduced, which requires firms employing 300 or more workers to obtain permission from the government for layoffs, retrenchment, and closures. Subsequently, the Act was made further stringent by an amendment in 1982 (which took effect in 1982). In its 1982 amendment, the ambit of the Act was expanded to firms employing at least 100 workers. Some of the important highlights of the Industrial Disputes (Amendment) Act, 1982 are discussed in Mamoria (2010) as follows:

- It has empowered the Central Government to refer an industrial dispute to a Labour Court or an Industrial Tribunal.
- The term "Industry" has been defined elaborately keeping in view the decision of the Supreme Court in the Bangalore Water Supply Company.
- Under the term "workmen" it shall cover even the supervisory staff that gets wages up to Rs. 1600 per month.

- The provision has been made to set up procedure for a time-bound grievance redressal (in those establishments which employ 100 or more than that number of workers) by putting in a new Chapter II-B. A time limit is stimulated for decided industrial disputes.

- The Amendment Act 1982 sets the provisions for continuing industrial dispute proceedings, in the event of death of a worker, by the heirs etc.

- A new Section, 17. B, is inserted which provides for full payment of wages etc to the worker in the case of employer preferring an appeal (over the decision of the Labour Court or Tribunal in respect to the reinstatement of any worker) to the Supreme Court or High Court.

- This amendment also provides for lay-offs in mines on several grounds.

- More importantly, the Chapter V-B is extended to establishments with 100 or more workers.

- Chapter V-C has been introduced which deals with the unfair labour practices by both employers and workmen besides trade unions. This Chapter also deals with the imposition of penalties.

The Industrial Disputes Act 1947 is comprised of 40 Sections which are grouped in 7 Chapters as follows:

Chapter I: It deals with the preliminary matters like the title, extent, commencement, definitions, particularly those relating to appropriate government, average pay, employer, workmen, industry, industrial dispute, strike, lay-off, lockout, public utility services, retrenchment, bonus, award and settlement, etc.

Chapter II: It details with the various Authorities under the Act and how they are constituted. These comprise Works Committee, Conciliation

Officers, Boards of Conciliation, Courts of Enquiry, Labour Courts, Industrial Tribunal ad National Tribunals.

Chapter III: It relates to reference of disputes to the various authorities, their cancellation, amendment of modification and voluntary reference by parties of disputes to arbitration.

Chapter IV: It deals with the procedures, power and duties of authorities; procedure to be adopted in dealing with the industrial disputes; publication of the reports and awards; settlement and commencement of the award; period of operation of settlement and wards.

Chapter V and VA: These deal with strikes, lockouts, their prohibition, illegal strikes, as well as lay-off, retrenchment, compensation, re-employment of retrenched workers.

Chapter V-B: It deals with closing down of establishment and V-C with unfair labour practices.

Chapter VI: It deals with penalties for illegal strikes and lockouts, instigation, breach of settlement and other offences.

Chapter VII: It deals with miscellaneous provisions.

2.2.1. Chapter V: Authorities under the Act

The main object of the Industrial Disputes Act is the investigation of and management of industrial Disputes. The various methods of settlement of industrial disputes as laid down in the industrial disputes can be classified under following heads:-

(II)　　Conciliation

(a) Works committee
(b) Conciliation officer

(c) Board of conciliation

(II)   Arbitration

(a) Court of inquiry

(III)   Adjudication

(a) Labour court
(b) Industrial tribunal and
(c) National tribunal.

Of these settlement machineries, the first one can be described as "quasi-administrative machinery", because it is governed and guided mainly by administrative principles and policy. Further, the persons constituting these machineries are generally chosen from those having administrative experience or qualities. They apply normally administrative mind to resolve an industrial dispute. On the other hand, the last two are "quasi-judicial machineries" for these are mainly governed and guided by judicial principles. The persons constituting these machineries are chosen from those having judicial background (Mamoria, 2010).

2.2.2. VI: Strikes and Lockouts

"Strike means a cessation of work by a body of persons employed in any industry acting in combination; or a concerted refusal to continue to work or to accept employment. Mere cessation of work does not constitute strike unless it can be shown that such a cessation of work was a concerted action for the enforcement of demand. Lockout, on the other hand, means the temporary closing of a place of employment, or the suspension of work, or temporary refusal by an employer to continue any number of persons employed by him" (Mamaoria, 2010). The Section 22 (1) of the Act puts strict restrictions on strikes and lockouts in public utility services, unless mandatory provisions of law are observed. Strikes and lockouts are

prohibited on the public utility services without fulfilling the following conditions.

(i) A statutory notice of strike/lockout must be given to the employer or the workman within six weeks before striking or locking out;

(ii) There must be no strike/lockout within fourteen days of giving such notice;

(iii) Where the date of strike/lockout is specified in such notice, no strike/lockout can be called/declared before the expiry of that date;

(iv) Where any conciliation proceedings are pending before a Conciliation Officer, no strike can be called or lockout declared during the pendency of any conciliation proceeding and seven days after the conclusion of such proceedings.

The provisions do not prohibit the workmen from going on strike but require them to fulfill the conditions before going to strike.

Section 22(2) lays down that no employer carrying on any public utility service shall lockout any of his workplace.

(i) Without giving them a notice of lockout.

(ii) Within fourteen days of giving such a notice.

(iii) Before the expiry of the stipulated period.

(iv) During pendency of any conciliation proceedings before a C.O. and a week after such proceedings.

If a strike is illegal the guilty party is punishable under section 26 of the act. Any workman who commences, continues or acts in furtherance of illegal strike, shall be punishable with imprisonment up to one month, or fine up to Rs. fifty or with both (Section 26). Similarly, if any employer who commences, continues or otherwise acts in furtherance of a lockout which is illegal, will entail a liability for payment of wages during the

period of lockout. Besides, he shall be punishable with imprisonment up to one month or fine up to one thousand rupees or both (ibid).

2.2.3. Chapter VII: Lay Off, Retrenchment and Closure

According to the Industrial Disputes Act, 1947, lay off means the failure, refusal or inability of an employer on account of shortage of coal, power or raw materials, or the accumulation of stocks, or the breakdown of machinery or for any other reason to give employment to workman, whose name is borne on the muster rolls of his industrial establishment and who has not been retrenched. The management has right to lay off its workers and adjust labour force to the requirements of work. It is interesting o note that the right of management to lay off its work force and adjust the labour is not solely discretionary. The IDA 1947 lays down that no workman whose name is borne on the muster rolls of an industrial establishment shall be laid off by his employer except with the previous permission of such authority as may be specified by the appropriate government by notification in the Official Gazette unless, such layoff is due to shortage of power or to natural calamity (Mamoria, 2010).

Under Section 25C the workmen who are laid off are entitled to compensation. Even when the layoff is the result of settlement between parties, the employer is bound to pay layoff compensation unless the settlement expressly provides otherwise. Again, even when the lay-off is due to the orders of the government pertaining to the working hours in an industry and the circumstances beyond the control of the employers, lay-off compensation has to be paid to the employee. To be entitled for compensation, the workman: (a) must not be 'baldi' workman or a casual workman; (b) his name must be on the muster rolls of the establishment; (c) he must have completed not less than one year of continuous service, i.e. not less than one hundred and ninety days in case of a workman employed below ground in a mine and 240 days in any other case, for a

period of one year. Normally the amount of compensation payable comes to fifty percent of the basic wages and dearness allowance.

2.2.4. Chapter VIII: Retrenchment

The Act defines retrenchment as "the termination by the employer, of the service of the workman, for any reason, whatsoever, otherwise than as a punishment inflicted by way of disciplinary action but does not include voluntary retirement, compulsory retirement of the workman on reaching the age of superannuation or termination of service on the grounds of continued ill health". Section 25 F lays down certain conditions for a valid retrenchment. These conditions are applicable in case of retrenchment of an employee who has been in service for not more than one year. "The conditions laid down in this regard are:

(a) One month's notice, in writing, has been given to the workman indicating the reason for retrenchment and the period of notice has expired or wages in lieu of such notice have been paid.

(b) The workman has been paid, at the time of retrenchment compensation equivalent to fifteen days' average wages for every completed year of continued service, or any part thereof in excess of six months; and

(c) Notice in prescribed manner has been served on the appropriate government within three days of notice or payment to workmen" (Mamoria, 2010).

Any employer who contravenes the provisions of Section 25-M or of Section 25-N, shall be punishable with imprisonment for a term which may extend to one month, or with fine which may extend to one thousand rupees or both.

2.2.5. Chapter IX: Compensation to workmen in cases of transfer of undertakings (Sec. 25 FF)

Where the ownership or management of an undertaking is transferred, whether by agreement or by operation of law, from the employer in relation to that undertaking to a new employer, every workman who has been in continues service for not less than one year in that undertaking immediately before such transfer, shall be entitled to notice and compensation, subject to the following conditions::

(i)   The service of the workman has not been interrupted by such transfer;

(ii)   The terms and conditions of service are not less favorable to the workman after transfer than they were before such transfer;

(iii)   (iii) The transferee is bound, under the terms of transfer, to pay the workmen in the event of their retrenchment, compensation, on the basis that their services had been continuous and has not been interrupted by the transfer (25FF).

2.2.6. Chapter X: Closing down of undertaking (Section 25 FFA)

The Act lays down that an employer who intends to close down an undertaking of an industrial establishment shall in a prescribed manner, apply for prior permission at least sixty days before the day on which the intended closure is to become effective, to the appropriate government, stating clearly the reasons for the intended closure of undertaking and a copy of such application shall also be served simultaneously to the representatives of the workmen, in the prescribed manner provided that nothing in this section shall apply to an undertaking in which (i) less than fifty workmen are employed or (ii) less than fifty workmen were employed on an average per working day. Where an undertaking is closed for any reasons, every workman who has been in continuous service for not less than one year in that undertaking immediately before such closure

shall be entitled to at least sixth days' notice and compensation as in the case of retrenchment. Where an undertaking is permitted to be closed down under sub-Section (2) where permission for closure is deemed to be granted under Sub-Section (3), every workman who is employed in that undertaking immediately before the date of application for permission under this section, shall be entitled to receive compensation which shall be equivalent to fifteen days' average pay for every completed year of continuous service or any part thereof in excess of six months (ibid).

2.3. B: The Contract Labour (Regulation and Abolition) 1970

The Contract Labour (Regulation and abolition) Act 1970 came into existence on September 5, 1970. The basic aim of it is to regulate contract labour and to lay down provisions for the abolition of contract employment. It is a central act, applying to the whole of India. The Act applies to establishments and contractors employing 20 or more workers. However, the Act does not apply to establishments performing intermittent or casual work. The appropriate government after consultation with the Central Board shall decide whether work performed is of intermittent or casual in nature. For a work to be not considered as intermittent or casual in nature, it must satisfy the two conditions: (i) It is performed for more than 120 days and (ii) It is not performed seasonally and is performed for more than 60 days in a year.

The Section 7 of the Act requires the principal employer to obtain from the authorities a certificate of registration. In order to obtain the registration, the employers need to declare the number of directly employed workers and make clear the nature of the work in which contract labour is to be employed. Besides, the employers need to declare the actual number of contract workers to be employed. Further, the Section 12 of the Act requires the contractors employing or supplying contract labour to obtain licenses. Obtaining the licence in turn requires contractors to disclose the details pertaining to the nature of work in which contract

labour is to be employed, and duration and number of workers. Specifications regarding hours of work, amenities, and wages shall be contained in the license. Under Section 8 of the Act, the license and the registration certificate may be suspended in the case of non-compliance (with the prescribed conditions) by employers or contractors.

The Act provides for the Central Advisory Contract Labour Board (or Central Board), which is to be constituted by the Central Government. The Board shall consist of (a) A chairman (b) The Chief Labour Commissioner (Central) and (c) Other members. Likewise, there shall be a State Advisory Contract Labour Board (State Board), which shall consist of a Chairman (appointed by the State Government) and the Labour Commissioner.

2.3.1. Prohibition of employment of Contract Labour

The Act (under section 10 (1)) authorizes the appropriate Government to prohibit employment of contract labour (in any process) after consulting the Central or State Board. Besides, the appropriate Government shall have regard to the conditions of work and benefits provided for the contract labour. And the appropriate Government's decision on any conflicts that arise (e.g. whether any work is of perennial nature) shall be final.

2.3.2. Welfare and Health of Contract Labour

Under the Contract Labour Act 1970, the appropriate Government may lay down rules making it mandatory for the establishment coming under the purview of the Act that one or more canteens are provided to contract workers. The canteen shall be provided and maintained by the contractor making use of contract labour. The appropriate Government may lay down rules pertaining to furniture, construction, accommodation etc of the canteens, besides setting the rules for foodstuff and its charges, served in the canteens. The Act also provides for the Rest-rooms at a place where

contract labour is required. The Rest-rooms shall be adequately maintained, lighted and ventilated. And the rooms shall be clean and comfortable. The Act also holds the contractor employing contract workers responsible for providing and maintaining sufficient drinking water supply at wholesale prices for contract workers. Besides, the contractors are also duty-bound to provide and maintain sufficient number of latrines and washing facilities conveniently and accessibly situated in the establishment. If the contractor employing contract labour fails to provide the amenities mentioned above within the prescribed time, then the principal employer shall be responsible for providing the same within such time as may be prescribed.

2.3.3. Responsibility of Payment of Wages

Under section 21 of the Act, a contractor shall be responsible for payment of wages (within a prescribed time as may be specified) to each contract worker employed by him. At the time of disbursement of wages to contract workers by the contractor, the principal employer shall nominate a representative to be present at the spot to make sure and certify that the wages are disbursed as per the norms prescribed. If the contractor fails to pay the wages to contract workers within the prescribed time, then the principal employer shall take the responsibility of payment to the workers and latter recover from the contractor the amount. The Act also provides for wage parity between contract workers and directly employed workers, if they both perform the same work. In general, the wages of contract workers must not be lower than the prescribed minimum wages.

As per the rules of the Act, whoever breaches any rule or provision of the Contract Labour Act 1970 shall be punished with imprisonment extending up to three months, or with a fine of rupees up to one thousand, or with both. In case the contravention is continued, then additional fine may be charged, extending to 100 rupees for every day during which such contravention continues following the conviction for the first such

contravention {for details, see the website of Chief Labour Commissioner (Central) Government of India}. However, while the Act provides for parity in the wages between contract workers and directly employed workers, the Supreme Court has clarified that the following conditions must be taken in to account while dealing with the issue of wage parity for similar work:

Nature of work and the skills required to perform it must be brought against the skills and dexterity of contract workers and directly employed workers. Also, the role and responsibilities taken by contract labour and directly employed labour be given a due consideration while deciding whether the two categories of labour performing the same work must be treated at par with each other or otherwise. "It is well settled that the nature of work cannot be gauged merely by looking into the volume of the work, as there always may be qualitative differences ranging from responsibility to reliability attached with the work {Uttar Pradesh Rajya Vidyut Utpadan Board v. Uttar Pradesh Vidyut Mazdoor Sangh (2009) 17 SCC 318.320}"(see also Das et al., 2015).

Likewise, in the another case (Hindustan Steelworks Construction Ltd. V. Commissioner of Labour and Others, 1996 LLR, 865(SC)) pertaining to the payment of lesser wages to the contract workers who performed the same work as regular workers performed, the court did not hold the principal employer responsible (as required by the Act) for the payment of the wages/shortfall amount (Das et al., 2015). So, all these cases indicate that the wage parity provisions under the Contract Labour (Regulation and Abolition) Act 1970 could not translate into practice. Thus, it failed to ensure wage parity between contract workers and directly employed workers, which resulted into a notable gap between the average daily earnings of the two categories of workers (see chapter 4 and 5 of this thesis).

Similarly, while the Contract Labour Act 1970 was basically set up to prevent and discourage the use of contract labour and regulate it where it is required; over the years, both the central and state government have issued notifications prohibiting the use of contract labour (Das et al., 2015). However, the question remains, what about the contract workers who lost jobs on the abolition of contractual employment? As per the initial judicial interpretation (as in Air India Statutory Corporation v. United Labour Union (1997) (9) SCC 377), the principal employer is required to absorb the workers (who lose their jobs on abolition of contract employment) in his enterprise as regular worker. However, in its judgment, the Steel Authority of India V. National Union Water Front Workers AIR 2001 SC 3527 maintained categorically that it was not compulsory for the principal employer of contract labour to absorb the work after the appropriate government abolished the contractual employment. Thus, over time, such kind of judgments have rendered the Contract Labour Act ineffective to providing social security to contract workers, and it hardly became a deterrent to the use contractual labour.

Chapter 3

Methodology

3.1. Introduction

There is no one denying the fact that the empirical investigation of the economic effects of labour laws is always susceptible to multiplicity of limitations arising due to the complexity in interpreting and quantifying the labour laws to capture their economic impact, using econometrics. Such kind of empirical studies pose a major challenge for researchers especially in developing countries like India, where there may exist a bulk of labour laws in papers but their implementation may be all but ineffective. However, since the debates on labour laws have taken center stage in this neoliberal phase of the global economy, researchers are inspired to venture into using the latest techniques in statistics and econometrics as an attempt to capture the impact of labour laws on several aspects of the industrial business. This study is devoted to analyze the impact of labour laws on three broader aspect of the industrial business -- productivity, employment, informalisation, and migration; therefore, each aspect requires different methodological treatment. There may be differences in the data as well as empirical strategy that are utilized to pursue the aforementioned aspects. However, there are substantial commonalities as well, ranging from the approach followed to measuring the stringency of labour market across states to selection of the basic empirical specification. The kind of approach pursued to overcome the econometric issues such as serial correlation and endogeneity may remain broadly the same for most of this study, though there may be changes in terms of instruments used, depending upon the hypothesis and objectives that are pursued. Therefore, in this section, we discuss the basic methodological contours of this study that mostly (but not necessarily) overlap across the various sections of this thesis; the specific methodology

for each aspect of this study is discussed separately in detail in the designated chapters.

Broadly, there are two types of methodologies that have been relied on by the empiricists to examine the economic effects of labour laws in India. One is called as 'before and after' which is pioneered by Fallon and Lucas (1990) and the other one that is pioneered by Besley and Burgess (2004) utilizes the state level variation in labour laws by following the lexemetrics approach to quantify the rigidity of labour laws. The first approach basically compares the performance of Indian manufacturing sector before 1976 and after; in the year 1976, the pro-worker labour laws were made more stringent with the amendments in Industrial Disputes Act, 1947. The studies following this approach (e.g. Roy, 2004) received criticisms on account of the fact that since 1976, many state governments have amended the central labour legislations; therefore, it would be misleading to ignore such amendments, while concentrating on central labour laws alone. Therefore, over the last ten years, researchers have mainly relied on Besley and Burgess's (2004) approach.

Besley and Burgess (2004) studied the existing labor laws especially those related to job security, and constructed an index for 15 major states of India which reflects the stringency of such laws across states. The index is constructed using the amendments undertaken by the state government to existing body of labour laws. The scoring/coding is based on reading all the state level amendments to the Industrial Disputes Act 1947 from Malik (1997). The study does categorize the amendments (carried out between 1952 and 1992) into three classifications – pro-worker; pro-employer; or neutral – and assign quantitative scores to each type of amendment. Using this index along with several control variables, Besley and Burgess (2004) find that job security regulations have a negative impact on output, investment and employment in Indian manufacturing sector. However, the BB index is severely criticized by Bhattacharjea (2006) on several grounds such as misinterpretation of several labour laws, and problem in the

coding system followed in the study. Besides, it is also argued that the index is constructed incognizant of the implementation and enforcement of the laws. Similarly, OECD (2007) develops an index called OECD index, using information on labour laws, including their implementation and enforcement. The index is used by several studies to classify the states in terms of labor market rigidity (see e.g. Dougherty, 2013, Gupta, 2009).

3.2. Measurement of Labour Laws

In this study, as far as the fundamental approach to capturing the effects of labour laws is concerned, we basically follow the Besley and Burgess (2004) approach. However, to construct an index, we follow the classification of states in Gupta et al. (2007). Gupta et al. (2007) draws three classifications of the Indian states. One is based on Besley and Burgess (2004); other is based on OECD index (OECD, 2007); and third is based on the limitations pointed out by Bhattacharjea (2006) against Besley and Burgess (2004). In this study, following Gupta et al. (2007), we apply majority rule on the abovementioned three classifications. Under this procedure, we take a given state as having rigid labor market and assign it score '1' if majority of the classifications (that means at least two) consider it rigid. If majority of the classifications pick up a given state as flexible, then we take it as flexible and assign score '-1'. Similarly, if a given state is considered as having neither too flexible nor too rigid labor market, then we pick it as less rigid (or neutral) and assign score '0'. Thus, we reach at what we call as employment protection legislation index (EPLI) reflecting the stringency of labor markets across the Indian states (see Table 3.1, 5th Column). The majority principle in this context enables us to weed out the potential errors that the individual studies may be subject to, unless the errors systematically exist with all these sources. Besides, under majority principle, the classification of states in terms of labor market rigidity also takes into account the implementation of the laws in books. Finally, given that the OECD index is a latest one as

29

compared to BB index which is based on amendments up to 1992, the former index under majority principle does also take care of the any amendments since 1992 to 2007. However, during this time period, the labour reforms have been all but inconsiderable (Gupta et al. 2007).

Table 3.1:- Employment Protection Legislation Index (EPLI) – based on "majority rule" on BB index, OECD index, and Battacharjea (2006).

State	BB index	Bhattacharjea	OECD index	EPLI
Andhra Pradesh	Flexible	0	Flexible	-1
Gujarat	0*	0	Flexible	0
Haryana	0	0	Flexible	0
Karnataka	Flexible	Flexible	0	-1
Kerala	Flexible	0	Rigid	0
Madhya Pradesh	0*	0	0	0
Maharashtra	Rigid	Rigid	Rigid	1
Orissa	Rigid	Rigid	0	1
Punjab	0	0	0	0
Rajasthan	Flexible	0	Flexible	-1
Tamil Nadu	Flexible	Flexible	0	-1
Utter Pradesh	0	Flexible	Flexible	-1
West Bengal	Rigid	0	Rigid	1

Note: (a) The classifications given in this Table (BB index; Bhattacharjea; OECD index) are taken from Gupta et al. (2007). The second classification (i.e. Bhattacharjea) is not drawn by Bhattacharjea (2004) himself, rather drawn by Gupta et al. by using the limitations pointed out by him (Bhattacharjea, 2004) against Besley and Burgess (2004).
(b) *Original coding was changed based on narrative/evidence from other studies.
(c) State gets code '-1' if majority of Classifications (i.e. at least two out of three – BB index, Bhattacharjea (2006), and OECD index) designate it as a flexible state. Likewise, it gets '1' or '0' if majority designates it as a rigid or neutral, respectively.

We make two changes in the BB index. First, as noted by Battacharjea (2006), Gujarat is designated as "rigid" by BB index on account of a single inconsequential amendment. Therefore, we pick Gujarat as neutral state and assign score '0' to it. Likewise, the average value of cumulative scores under BB method for Madhya Pradesh is very close to zero. We effectively assign it '0' and treat the state as "neutral."

3.3. Basic empirical framework

We use this index along with control variables to capture the effect of pro-worker labour laws, using state level panel data. Generally, this follows as under.

$$y = \alpha_0 + \beta(EPLI) + u$$

Where, y is the dependent variable, which varies as per our hypothesis. In this study it is either total factor productivity, or labour productivity, or employment etc. EPLI is the index showing rigidity of pro-worker labour laws, and u is the error term. Beta captures the impact of rigidity on dependent variable.

In econometrics, there are two types of panel models. One is simple panel model, which involve data on cross section over time. The other and the rich form of panel model is what researchers call as three-dimensional panel model. In such panel, there may be data on more than one cross sections (i.e. there may be two cross section dimensions) and the data on both the cross sections is observed over time. In the context of India, following the Besley and Burgess (2008), there has been an extensive use of three-dimensional panel data to investigate the economic effects of labour laws (see e.g. Aghion et al., 2009; Gupta et al., 2009; Mitra and Ural, 2008; Dougherty, 2013; Sen et al., 2013; Sapkal, 2014). These studies have utilized the data on manufacturing industries across various states − industry-by-state panel data. In this approach, a researcher basically selects some manufacturing industries, and the same industries are selected from various states of India to examine as to how the

performance of these industries vary across states while controlling for the other state-specific factors. This is as under:

Simple panel model:- $\qquad y_{st} = \alpha_0 + \alpha_1 (EPLI)_s + u_{st}$

Where, y_{si} is the data (on dependent variable) in state 's' and year 'i'. X_s is the stringency of labour laws in state 's', and u_{si} is the panel error term. Thus, in simple panel model there are two sub-scripts on the dependent variable.

Three-dimensional panel model:-

$$y_{ist} = \alpha_0 + \alpha_1 (EPLI)_s + u_{ist}$$

Where, y_{ist} is the data (on dependent variable) in industry 'i', state 's' and year 't'. Thus, there are three sub-scripts on the dependent variable.

The main motive behind using the three-dimensional panel data is to achieve disaggregation in the data. This study is mostly based on three-dimensional panel data for 28 industries across 13 major states of India for the period 1999-00 to 2007-08. In this way we have total of 364 cross section units, while total number of observations sum up to 3276 (28x13x9= 3276). Apart from using state-specific controls, we also include industry specific control variables, unlike the previous studies. Our estimation basically follows the fixed effect model, which is important as the appropriate 'test' for choice between the fixed and random effect model turns in favor of the former one. Besides, the importance of the fixed effect model arises from the fact that our panel involves various states that may be different in several respects which may not be observable in the model.

In econometrics, a fixed effect model (FEM) is a statistical model in which "the intercept in the regression model is allowed to differ among individuals in recognition of the fact each individual, or cross-sectional, unit may have some special characteristics of its own. FEM is appropriate

in situations where the individual intercept may be correlated with one or more repressors" (Gujarati, 2007).

This is in contrast to random effect model (REM) or error correction model (ECM) in which "it is assumed that the intercept of an individual unit is a random drawing from a much larger population with a constant mean value. The individual intercept is then expressed as a deviation from this constant mean value" (ibid). In presence of the differing intercepts, one of the commonly method is the least square dummy variable (LSDV). However, it has its own demerit in that when N (number of cross sectional units) is large, the LSDV consumes a lot of degrees of freedom. On the other hand, the main merit of the REM is that it is very economical as there is no need of N cross-sectional intercepts. The choice of the appropriate model is of great importance. REM is more efficient than FEM if the random effects assumption holds; otherwise, REM is not consistent and in that case FEM is the better model specification (for detailed discussion on FEM and REM, see Baltagi, 2008; Wooldridge, 2010).

3.4. Testing Fixed Effect (FE) vs. Random Effect (RE).

To decide which model is appropriate, Hausman test can be used with the following null and alternative hypothesis:

$$H_{0:} \; \alpha_i \perp X_{it}, Z_i$$

$$H_{a:} \; \alpha_i \not\perp X_{it}, Z_i$$

Where, X_{it} is the time-variant 1xk regressor matrix, α_i the unobserved time-invariant individual effect and Z_i are time-invariant regressors.

If H_0 is true, both $\hat{\beta}_{RE}$ and $\hat{\beta}_{FE}$ are consistent, but only $\hat{\beta}_{RE}$ is efficient. If H_a is true, $\hat{\beta}_{FE}$ is consistent and $\hat{\beta}_{RE}$ is not.

$$\hat{Q} = \hat{\beta}_{RE} - \hat{\beta}_{FE}$$

$$\widehat{HT} = T\widehat{Q}'[Var(\hat{\beta}_{FE}) - Var(\hat{\beta}_{RE})]\widehat{Q} \sim \chi^2_{K} \text{where}$$
$$K = \dim(Q)$$

The Hausman test is a specification test so a large test statistic might be indication that there might be Errors in Variables (EIV) or our model is miss-specified. If the FE assumption is true, we should find that $\hat{\beta}_{LD} \approx \hat{\beta}_{FD} \approx \hat{\beta}_{FE}$.

A simple heuristic is that if $\left|\hat{\beta}_{LD}\right| > \left|\hat{\beta}_{FE}\right| > \left|\hat{\beta}_{FD}\right|$ there could be EIV.

In panel econometric analysis on labour laws, one of the empirical problems faced by researchers is the fact that the index on EPL varies across states but remains constant over time; the usage of time-invariant variables is ruled out in fixed effect (FE) model unless interacted with any time-variant variable. Therefore, in most of the regressions that we estimate in this study, the EPL index (EPLI) appears in the equation in the form of interaction, as most of the regressions are estimated under fixed effect framework. Appropriate time-variant is chosen for interaction with the EPLI. The selection of the time-variant variable mainly depends on the hypothesis we are interested to test. This appears as under:

$$y_{ist} = \alpha_0 + \alpha_1 (X_{ist} * EPLI_s) + a_2 X + u_{ist}$$

Where, X_{ist} is a time-variant variable, varying across industries and states and over time as well. The coefficient on the interaction (a_1) captures the impact of stringency of labour laws when the time-variant variable X_{ist} increases simultaneously. The interpretation can be done other way around – that is, the impact of increase in X_{ist} for the industries operating in the states having relatively rigid labour laws.

3.5. Serial correlation problem: Clustered standard errors

The potential serial correlation is dealt in this study by estimating robust standard errors clustered at the industry-by-state level. (See Bertrand et al., 2004). In this procedure the assumption of independence and identical distribution of errors is relaxed. However, the errors are assumed to be independent between clusters. Clustered standard errors happen to be robust to serial correlation.

3.6. Endogeneity issues

One of the concerns that we face in our empirical analysis is the problem of endogeneity. In this study, since the data on key variables like informalisation and the number of strikes/lockouts are extensively used besides the index on labour market rigidity, the possibility of endogeneity in the empirical model is much higher. Endogeneity is a case in econometrics, when there is a correlation between a regressor and the error term in the model. In such case, the OLS (Ordinary Least Square) estimates turn out to be biased. The problem of endogeneity can be driven by several factors, which are discussed as under:

3.6.1. Omitted variable

Sometimes, there may be a variable that is correlated with a regressor as well as the error term in the model. If such variable is omitted from the model, it will cause the problem of endogeneity. To put it more formally, let's for example consider a model as follows:

$$y_i = \alpha + \beta X_i + \gamma Z_i + \varepsilon_i$$

Assume that this model is a correctly specified, but due to the lack of data and non-availability of its measure, we omit Z_i while running a regression. In that case, the omitted term Z_i is likely to be contained by the error term in the model and thus we end up estimating the following model.

$$y_i = \alpha + \beta X_i + u_i$$

Where, $u_i = \gamma Z + \varepsilon_i$

Now, in this case, if there exists a significantly different from zero correlation between X and Z and the latter also affects y independently (which means, $\gamma \neq 0$), then there may exist a correlation between X and the error term ε, resulting into endogeneity problem (Green, 2012; Kennedy, 2008; Kmenta, 1986).

3.6.2. Measurement error

Measurement error arises on failure to obtain a correct measure of one of our explanatory variables or regressors. For example, rather than observing x_i^* we mistakenly pick up $x_i + v_i$, with v_i representing the measurement "noise". In such situation, a model such as

$$y_i = \alpha + \beta x_i^* + \varepsilon_i$$

is specified in observables and the error terms as under:

$$y_i = \alpha + \beta(x_i - v_i) + \varepsilon_i$$

$$y_i = \alpha + \beta x_i + (\varepsilon_i \beta v_i)$$

$$y_i = \alpha + \beta x_i + u_i \, (where, u_i = \varepsilon_i - \beta v_i)$$

Because both the terms (x_i and u_i) have bearing with v_i, giving rise to a correlation between the two terms. It results in the OLS estimation being biased downwards. However, the measurement error in the regressor, does not lead to problem of endogeneity, although it may cause hike in the variance of the error term (Green, 2012; Kennedy, 2008; Kmenta, 1986).

3.6.3. Simultaneity

Simultaneity is one of the main causes of endogeneity. It arises when there is a bilateral relation between two variables say (x and y), with both influencing each other simultaneously. For example, consider the two structure equations as follows:

$$y_i = \beta_1 x_i + \gamma_1 z_i + u_i$$

$$y_i = \beta_2 x_i + \gamma_2 y_i + v_i$$

It can be shown that endogeneity problem may stem from estimating either of the two equations. In the case of first equation, it can be shown that $E(z_i u_i) \neq 0$. To begin with, solving for z_i can get us (assume $1 - \gamma_1 \gamma_2 \neq 0$),

$$zi = \frac{\beta 2 + \gamma 2 \beta 1}{1 - \gamma 1 \gamma 2} xi + \frac{1}{1 - \gamma 1 \gamma 2} vi + \frac{\gamma 2}{1 - \gamma 1 \gamma 2} ui$$

Assuming that u_i is not correlated with x_i and v_i, we get that,

$$E(ziui) = \frac{\gamma 2}{1 - \gamma 1 \gamma 2} E(uiui)$$

$$E(z_i u_i) \neq 0$$

Therefore, estimation of the any of the above equations is likely to be hindered by the problem of endogeneity (Green, 2012; Kennedy, 2008; Kmenta, 1986).

3.6.4. Dynamic Models

The problem of endogeneity also arises in the case of the dynamic econometric models. It can arise both in panel data model or time serious model, involving the lags of dependent variable as one of the explanatory variables. The requirement of the inclusion of the lag of dependent variable as an independent variable may arise when the value of dependent variable in time t is influenced by its value in the previous period (t-1) (ibid).

3.7. Remedial measure

The most commonly used method to overcome the problem of endogeneity is the Instrumental variable two stage least square regression estimation. Although it is challenging to find relevant instrumental variables and assert that the selected instruments are valid, we make an attempt in this study to follow the instrumental variable estimation technique to get around the problem of potential endogeneity (ibid).

3.7.1 Instrumental Variable two stage least square

Instrumental variable method is one of the popular methods of removing the endogeneity problem in the model, which may arise due to above-mentioned sources. In presence of endogeneity, the ordinary linear regression is more likely to generate biased and inconsistent estimates, resulting into misleading conclusion (Bullock et al., 2010). However, if there are at least one or more instruments available, consistent and unbiased estimates can be obtained using instrumental variable estimation procedure. A variable that is highly correlated with the endogeneous regressor in the model and is not among one of the explanatory variables in the model is called as instrument variable (IV). The use of instrument variable must satisfy the following conditions:

- There must be at least one instrument for each endogeneous explanatory variables.
- The instrument must satisfy the exclusion restriction. The condition of exclusion restriction requires an instrumental variable to be directly correlated with endogenous regessor but not with the dependent variable in the model.
- The instrument must not be correlated with the error term in the model.

Formally, instrumental variable for the model (given below) is a variable Z_i such that $Cov(Z, X) \neq 0$ and $Cov(Z, u) = 0$

$$y_i = \beta_0 + \beta_1 X_i + u_i$$

Instrumental variable technique involves two stages of estimation. One is called First Stage Least Square (FSLS) and other is 2nd Stage Least Square (2SLS).

Consider a linear multiple regression model

$$y = \alpha_0 + a_1 X = u$$

38

Where X is an endogenous variable. In order to remove endogeneity in X, using instrumental variable, we run FSLS wherein the endogenous regressor Z is regressed on set of one or more relevant and valid instrument say Z. This is as follows (Note: the details on the actual instruments used in this study are given in the designated sections/chapters of this study).

First stage least regression:

$$X^{FSLS} = \pi_0 + \pi_1 Z + \varepsilon$$

Where Z is/are exogenous instrument(s) satisfying conditions that $\text{cov}(Z, X) \neq 0, \text{cov}(Z, \varepsilon) = 0$.

Then, the predicted values of X (i.e. $\hat{X}$) are stored and used in the original equation as an exogenous regressor or instrumented X. This is follows as under:

2nd Stage least Square:

$$y^{2SLS} = \alpha_0 + a_1 \hat{X} = u$$

Since endogenous covariates and the instruments are observable, one can check the strength of the latter by following a rule of thumb: "the F-statistic against the null that the excluded instruments are irrelevant in the first-stage regression should be larger than 10" (Wright and Yogo, 2002).

The assumption that there is no correlation between the instruments and the error term in the equation of our interest is not testable in exactly identified models; however, in over-identified modes, the assumption can be tested while exploiting the available information. In this regard, there is a test, called Sargan Test, which is based on the observation that there is no correlation between the residuals and the exogenous regressors in the model if the instruments are truly exogenous.

Formally, this is as under;

$$\hat{u}^{2SLS} = \beta_o + \pi_n Z_n + v$$

Where, $\pi_n Z_n$ is a vector of excluded instruments and other exogenous regressors. $\hat{u}$ is the predicted error term from the 2SLS.

Under the Null hypothesis, $H_0 : Cov(z_{nist}, \varepsilon_{ist}) = 0$, $N*R^2 \approx X^2$ with L-K degrees of freedom. Where, L is the number of instruments and K is the number of endogenous right hand side variables in the original equation. If the null-hypothesis (H_0) is not rejected based on the Sargan Statistics, then we may consider the instruments as valid.

3.8. Data source

Our analysis uses 3-digit Annual Survey of Industrial (ASI) data (NIC-1998 and 2004) on 28 industrial sectors across 13 major states of India, for the period 1999-00 to 2007-08. The data on fixed capital, number of workers employed through contractors, directly employed workers, Per Capita Net State Domestic Product (PCNSDP), Wholesale Price Index (WPI), daily earnings of contractual and directly employed workers, and Consumer Price Index for Industrial Workers (CPI-IW) are collected from the Ministry of Statistics and Program Implementation (MOSPI), Central Statistical Organization (CSO) and the Labour Bureau, Government of India. Data on control variables, like development expenditure, per capita power consumption, number of strikes to lockouts, man-days lost due to strikes and lockouts are collected from the Centre for Monitoring Indian Economy (CMIE) States of India and the Indian Labor Bureau, Government of India. The data on output is available in monetary terms. We convert it into constant prices by using the WPI (base= 2004-05). On the other hand, the data on daily earnings of contractual and regular workers is converted into constant prices using CPI-IW (base year: 2001).The summary statistics of the key variables are presented in Table 3.2. The average value of 'regulatory environment' is -0.153 with standard deviation of 0.769. The negative mean value of the regulatory environment suggests that Indian labor market is by and large a flexible

one, as per the labor legislations in the books. The percentage share of contractual workers for the selected 28 industrial sectors across 13 states is 0.491 for the sample period, with standard deviation of 0.997.

(Table 3.2):- Summary Statistics: 1999-000 to 2007-08

Variables	Mean	Standard	Variation Deviation
Output (Real terms)	267878	641706.2	by Industry, year and state
Contractual workers	2675.85	5098.25	by Industry, year and state
Permanent workers	8538.07	19010.79	by Industry, year and state
Fixed Capital	103749	262460.3	by Industry, year and state
Total workers	11213.93	21544.55	by Industry, year and state
Share of Permanent Worker	0.4917997	0.9979931	by Industry, year and state
EPLI	-0.1538462	0.7693482	by state and year
Man days lost to strikes and lockouts	1966562	4344532	by state and year and state
Per capita NSDP	20212.21	6843.574	by state and year
Power per Million	415.5108	215.8459	by state and year
Dev. Exp pm	3.104701	0.1948673	by state and year

Author's calculations.

3.9. Definitions of Variables

Fixed Capital

"Fixed Capital Represents the depreciated value of fixed assets owned by the factory as on the closing day of the accounting year. Fixed assets are those that have a normal productive life of more than one year. It includes lease-hold land, buildings, plant and machinery, furniture and fixtures, transport equipment, water system and roadways and other fixed assets such as hospitals, schools etc. used for the benefit of factory personnel" (source: Annual Survey of Industries).

41

Workers

"Workers are defined to include all persons employed directly or through agency whether for wages or not and engaged in any manufacturing process or in cleaning any part of the machinery or premises used for manufacturing process or in any other kind of work incidental to or connected with the manufacturing process or the subject of the manufacturing process. Labour engaged in the repair and maintenance or production of fixed assets for factory's own use or labour employed in generating electricity or producing coal, gas etc. are included" (ibid)

Total output

"Comprises total ex-factory value of products and by-products manufactured as well as other receipts from non industrial services rendered to others, work done for others on material supplied by them, value of electricity produced and sold, sale value of goods sold in the same conditions purchased, addition in stock of semi-finished goods and value of own construction. Rent received and interest is not being included from ASI 2001-02" (Ibid).

Contract workers

"All persons who are not employed directly by an employer but through the third agency, i.e. contractor, are termed as contract workers. Those workers may be employed with or without the knowledge of the principal employer" (Ibid). These workers are not covered by the employment protection regulations given under the Industrial Disputes Act 1947.

State Development Expenditure

It refers to "State spending on economic services (agriculture, rural development of special area programs, irrigation and flood control, energy, industry and minerals, transport and communications, science, technology, and environment) and social services (education, medical and public health, family welfare, water supply and sanitation, housing, urban

development labour and labour welfare, social security and welfare, nutrition and relief)" (Source: CMIE States India).

Power

Installed electrical capacity of electrical generation plants. It is measured in thousand kilowatts (source: CMIE States of India).

Strikes and Lockouts

"Strike means a cessation of work by a body of persons employed in any industry acting in combination; or a concerted refusal to continue to work or to accept employment. Mere cessation of work does not constitute strike unless it can be shown that such a cessation of work was a concerted action for the enforcement of demand. Lockout, on the other hand, means the temporary closing of a place of employment, or the suspension of work, or temporary refusal by an employer to continue any number of persons employed by him" (Mamaoria, 2010).

Chapter 4

Labour Laws and Informalisation of Employment

4.1. Introduction

For the last two decades, there have been increasing attempts by economists and policy makers in India and elsewhere to investigate the impact of labour laws on industrial performance. Theoretical literature in labour economics explains that labour laws are bad for employment, output, productivity, and investment growth (Nickel, 1986; and Hamermesh, 1993). However, there seems to be contradictory findings when it comes to empirical literature on this subject, leading to a situation where economists and analysts find it difficult to define unequivocally the role of labour laws in industrial business. In India, there has been a substantial growth in informal employment, even in formal manufacturing sector where, as per annual survey of industries, contractual employment has increased from 13 % in 1993-94 to 35 % in 2010-11. The incidence of contractual and casual employment has increased substantially in OECD countries also (OECD, 2007). Since informal employment most often does not fall under the purview of the most contentious chunk of labour laws, i.e. employment protection legislation (EPL), this type of employment is therefore considered as flexible labour force, offering the employers a route to evade the brunt of labour laws (Nagaraj, 2004). Therefore, many scholars believe that the debate on labor laws, particularly on EPL, loses relevance in the context of increasingly emerging dualistic labor market featuring dwindling share of regular workers and upward trajectory of informal employment (see e.g. Kapoor, 2014).

Although greatly alarming, the spiraling growth in informal employment in both developed and developing countries has not received adequate

attention of researchers and policy makers. The substitution of informal labor for formal employment may offer numerical flexibility to employers in respect to employment adjustment. However, given the fact that informal worker is "inferior" input as compared to formal worker (Sen et al., 2013), it may negatively affect productivity growth, though it can lead to higher job growth through savings on wages bills (Kleinknechtet at al., 2006; Maiti, 2013).

Given the literature showing the "inferiority" of informal worker as a labor input and its negative impact on efficiency and productivity, the question arises that what actually motivates the employers to substitute the informal worker for formal worker? In other words, the broader question that needs to be investigated is: what are the determinants of informalisation of employment?

With the rising tide of globalization ratcheting up pressure on business establishments, the employers have been vehemently clamoring for flexibility which, they argue, is necessitated by the increasingly volatile nature of market demand. Volatile demand requires employers to make frequent adjustments in the size of employment, which entails laying off redundant labour force at times when market is subdued and hiring additional labour force when there is spurt in demand. Since EPL in India and elsewhere translates into firing restrictions as it subjects the employer to monetary as well as administrative costs, there is possibility that employer may seek ways to evade the job-security laws. The easiest option for employers to evade the labour laws is to hire contract non-regular workers. This study, therefore, essentially investigates whether informalisation is linked with EPL and volatility. We also examine whether labour bargaining power has any impact on the incidence of informalisation.

With a plethora of labour laws in papers (OECD, 2007) and the upward trajectory of informalisation cutting across alarming levels, the Indian manufacturing sector serves as a perfect case to investigate in "the impact

of above-mentioned factors on incidence of informal employment." This study is, therefore, based on 3-digit level data from Indian manufacturing sector, on 28 industrial sectors between 1999-00 to 2007-08 across 13 major Indian states; thus, we use (28x13x9) three-dimensional panel data. We exploit the state-level variation in EPL to capture its impact[1]. Our results show that incidence of informal employment is directly related with EPL and volatility, suggesting that among other factors, evading the labour laws is one of the reasons of increasing trend in informal employment. Besides, the results also show that with the increase in labour bargaining power, employer tends to substitute informal labor for formal labor. The results are robust to endogeneity correction. We follow instrumental variable two stage least square (IV 2SLS) estimation to overcome the endogeneity issues.

4.2. Literature Review

The impact of Employment Protection Legislation (EPL) on industrial performance is documented in theoretical literature (See, for example, Bertola, 1990; Hopenhayn and Rogerson, 1993; Hamermesh, 1993; Nickell, 1986). Bertola (1990) developed a dynamic partial-equilibrium model in which he shows how the firing costs imposed by EPL can distort the optimal employment policy of a firm. The model shows that at times when market demand is subdued and the labour force available with employers become unprofitable, the firing costs associated with EPL has the potential to hinder the layoffs, resulting into redundancy in firms and thus lead to inefficiencies. The model also shows that these firing costs also serve as prospective costs, which are taken into consideration by employer while hiring fresh workers. Therefore, during favorable economic conditions, the actual hiring of worker may be lesser than the desired. In this way, the EPL is shown to have the potential of creating inefficiencies and stifling employment generation. Likewise, Hopenhayn and Rogerson (1993) developed a general equilibrium model based on

U.S. economy that accounts for entry and exit of firms. They presuppose a context, wherein job creation and destruction of firms take place every period in response to firm-specific shocks; and then explain that the average employment in US would be positively linked with firing costs as the latter will result in lesser firing. However, this model also shows that the firing costs would impinge upon firm entry and job creation in newly created or existing firms. In their empirical analysis, they find that higher firing costs in U.S negatively affected average employment. In his model, Kugler (2000) shows that job security regulations would induce the firms with higher labour-turnover to operate in informal sector. Also, the effect of EPL is also drawn from the insider/outsider literature (see e.g. Lindbeck and Snower, 1987).

The increasing trend in informal employment across the world predominantly in developing countries like India drew attention from researchers into studying the various aspects of the informal employment system {see, for example, Autor (2003) for America; Pierre and Scarpetta (2013) for cross-country level; Almeida and Carneiro (2009) for Brazil, Gimpelson et al. (2010) for Russia; and Ronconi (2010) for Russia}. However, the literature on causes of informal employment is scarce especially from Asian region. Specifically, in India, despite the alarming trajectory of informalisation breaching even core activities of business in manufacturing sector, the literature on informalisation did not cast light on the causes of sharp growth in informal employment and the impact of labour laws on regular employment. Goldar (2009), attempts to link informalisation with labour laws using 3-digit level cross-section. The study draws on state-level variation in labour laws to capture the impact. He concludes that EPL significantly contributes to informalisation. The finding of the study may, however, be questionable on several grounds. One, that it is based on too small number of observations. Second, it does not account for the fixed effects in the model, which are crucial for studies involving various states that significantly differ from each other on

economic policy front, political ideological front, and natural characteristics. Besides, it also omits several important control variables. Kapoor (2014) recently brought up the issue of dualism in work-force, i.e. co-existence of regular and contractual worker, in the context of labour laws. In her non-econometric article, she concludes that reforming labour laws in employer direction may not help create job, adding that there is a need to curb the dualism in labour market. However, she too fails to explain the basic causes of the dualism.

However, there is a substantial body of literature in Indian context using econometrics techniques which examines the economic effects of EPL on employment, output and productivity in Indian manufacturing sector.

In their study for the period 1959-82, Fallon and Lucas (1993) exploited the fact that the EPL was made further stringent with the amendments in IDA in 1976 and 1982. They created the dummy variable, taking the value "zero" up to 1975-1976 and "one" thereafter. The findings of their study show that the sluggishness in employment adjustment was not significantly higher after 1975-76 than before. However, they find that the amendments had a significant impact on employment, especially in large business establishments covered by EPL under IDA. Along the similar methodological line, Roy (2004) finds in his analysis that there were rigidities in employment adjustment. However, he notes that the rigidities existed even before 1975-1976.

Besley and Burgess (2004) constructed an index, using the amendments undertaken by state governments to Industrial Disputes Act (IDA). The study classifies the amendments into three categories – pro-worker, pro-employer, and neutral – and assigns the scores '1', '-1', and '0', respectively. The scoring/coding is based on reading all the state level amendments to the Industrial Disputes Act of 1947 from Malik (1997). By cumulating the scores over time, they construct a stringency measure of EPL. Using the index along with control variables, they investigate the impact of EPL on industrial performance. The study concludes that EPL

has a negative impact on output, employment, and investment. However, the study drew many criticisms from researchers on grounds such as false interpretation of certain amendments, and faulty coding and cumulation procedure (Battacharjea, 2006). However, after making the changes in the BB index as per Bhattacharjea (2006), many studies find the results are still in line with Besley and Burgess (2004) -- see for example Ahsan (2009); Adhvaryu et al. (2014) etc. Using OECD index, Dougherty et al. (2013) carried out a firm-level analysis and find higher productivity in firms that are operating in flexible states. Similarly, Mitra and Ural (2008), using BB index, finds a positive effect of industrial-de-licensing in flexible states on labor productivity.

Our study is important because it contributes in the existing literature by overcoming the above-mentioned research gaps in the literate. Besides, we also study the link between informalisation, and labour bargaining power and volatility.

4.3. Empirical Strategy

4.3.1 Econometric Model: Three-Dimensional Panel Regression

To investigate under fixed effect model[1] whether employment protection legislation (EPL) and bargaining power constitute disincentives to employment of formal workers, we first identify a relevant time-variant variable with which the EPL index (EPLI) can be interacted to make it

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[1] The importance of using fixed effect model arises from the fact that under Hausman test, the null hypothesis of zero correlation between error term and explanatory variables is rejected. In other words, the hypothesis of coefficient estimates of random of random effect model and fixed effect model are equal to one another – is rejected, which suggests that random effect estimator is inconsistent. Besides, as our data is three-dimensional panel – involving cross-industry as well as cross-state variation, therefore it is important to include fixed effects in the model.

compatible with the fixed effect model[2]. The time variant variable must, in this context, be strategically related with the share of contractual worker, preferably negatively. For this purpose, we draw on the empirical evidence in Sapkal (2014) which shows a decreasing impact of fixed capital – a proxy for technology – on the share of contract workers, suggesting that the industries using more technology prefer less contractual workers and more regular worker. To confirm this, we run a regression of the following form:

$$(C.W/TW)_{ist} = \beta o + \beta_1 K/L_{ist} + X_k \beta_k + \gamma_i + \lambda_s + \delta_t + \varepsilon_{ist} \qquad \textbf{(1)}$$

Where, $(CW/TW)_{ist}$ is the log ratio of contractual worker to total number of workers in industry 'i', state 's' and year 't' – the total number of workers is equal to the sum of contractual and regular workers. K/L_{ist} is the log ratio of total fixed capital to total labour force – proxy for technology. The coefficient of our interest (β_1) captures the impact of technology on the relative share of contract workers. $X_k \beta_k$ is a vector of state-specific and industry-specific control variables. γ_i, λ_i and δ_t are the industry, state and year fixed-effects, respectively. The results in column 1, Table 4.2, show that the coefficient on K/L is negative and highly significant, implying that the higher use of technology discourage the employment of contractual workers and encourage that of regular workers.

Now, in order to estimate with fixed effect model the impact of EPL on relative share of contract workers, we interact the EPLI (discussed in methodology: chapter 3, Table 3.1) with K/L , as follows:

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[2] Since the EPLI is a time-invariant variable, it cannot be included separately in the fixed effect model. We must interact it with a relevant time-variant variable, so as to include it in the model.

$$(C.W/TW)_{ist} = \beta o + \beta_1 K/L_{ist} + \beta_2 K/L_{ist} * EPLI_s + \beta_3 S/L_{st} + X_k \beta_k + \gamma_i + \lambda_s + \delta_t + \varepsilon_{ist}$$

(2)

Given the negative sign on β_1 in equation (1), if EPL is there as a disincentive to employment of regular workers, then the coefficient on the interaction between EPLI – a proxy for rigidity – and K/L (i.e. β_2) is likely to be positive. The positive significant coefficient on the interaction would suggest that the more use of technology in states with rigid labour markets encourages the employment of contractual workers.

To measure the impact of labour bargaining power, we use ratio of number of strikes to number of lockouts (S/L_{st}) as a proxy for bargaining power[3]. Number of strikes per lockout is an appropriate measure of worker bargaining power, with higher value of it indicating higher bargaining power for regular workers (Sen et al., 2013).

4.3.2. Autocorrelation and Endogeneity correction

To deal with the problem of auto-correlation in the model, we estimate robust standard errors clustered at the industry-by-state level (Bertrand et al., 2004). One of the major concerns in our model is the reverse causality between S/L and CW/TW. Increasing usage of contractual worker may provoke the regular (or permanent) workers into resorting to strikes, causing a bi-directional relation between the share of contractual worker and ratio of strikes to lockouts. The bi-directional relation or reverse causality may in turn lead to the problem of endogeneity, which in turn may detract from the credibility of the estimates. To overcome such

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[3] "Strike" is a refusal to work, organized by a body of employees as a form of protest, typically in an attempt to gain a concession or concessions from their employer. On the other hand, "lockout" is the exclusion of employees by their employer from their place of work until certain terms are agreed upon.

problem, we follow instrumental variable two stage least square (IV 2SLS) estimation. We run a first stage least square (FSLS) whereby we estimate, using some valid instruments, the endogenous ratio of strikes to lockouts (S/L). Then, we store the predicted values of it, which are free from endogeneity. In other words, the predicted value ($\hat{s/l}$) − also called as instrumented − is an exogenous variable. Then, this predicted variable is included back in equation (2) to measure the impact of labour bargaining power on contractualisation. This approach is formally discussed as follows:

First stage least square:

$$(S/L)^{FSLS}{}_{st} = \pi_0 + Z_n \beta_n + \varepsilon_{st} \, \text{n} \in 1,2,.....,n \tag{3}$$

Where, Z_n is a vector of instruments fulfilling the following conditions:

$Cov(Z_i, \varepsilon_{ist}) = 0$ and $Cov(Z_i, S/L_{st}) \neq 0$

Two stage Least square:

$$(C.W/TW)_{ist}{}^{2SLS} = \beta_0 + \beta_1 C/L_{ist} + \beta_2 C/L_{ist} * EPLI_s + \beta_3 \, \hat{s/l}_{st} + X_k \beta_k + \gamma_i + \lambda_s + \delta_t + \varepsilon_{ist}$$

$$\tag{4}$$

Where, $(\hat{s/l})$ is instrumented strike to lockout ratio or estimated values of the ratio.

Thus, for policy implications, we are finally interested in equation (4).

4.3.3. Test of over-identifying Restrictions

The instruments we employ in equation (3) must be valid in that they have to satisfy the condition, $Cov(z_{nist}, \varepsilon_{ist}) = 0$. We check the validity of the instruments using Sargan's test, whereby we calculate the residuals from 2SLS and then regress them on the instruments and the remaining other exogenous variables included in our original equation. This is as follows:

$$\hat{\varepsilon}_{ist}^{2SLS} = \beta_o + \pi_n Z_{nist} + k_k X_{kist} + v_{ist} \qquad (5)$$

Under the Null hypothesis, $H_0 : Cov(z_{nist}, \varepsilon_{ist}) = 0$, $N*R^2 \approx X^2$ with L-K degrees of freedom. Where, L is the number of instruments and K is the number of endogenous right hand side variables in the original equation. If the null-hypothesis (H_0) is not rejected based on the Sargan Statistics, then we may consider the instruments as valid.

To identify the relevant instruments for endogenous "ratio of strikes to lockouts," we draw on the information in Botero et al. (2004), which shows that the left of the centre political parties across the world lead more stringent pro-worker regulations and happen to be more inclined towards labour unions. Likewise, in India too, the left of the centre political parties are claimed to be pandering to labour unions, and are biased more in favour of workers than employers (Aghion et al., 2008; Cali and Sen et al., 2011). Therefore, we exploit the relative share of electoral seats occupied by various groups of political parties in state legislature, between 1999-00 and 2007-08. Between this time-period, there had been at least two rounds of state elections, causing a pronounced variation in the electoral seat share. For classifying the political parties according to their fundamental ideologies – left or right, we follow Aghion et al. (2008). The political parties are classified into three categories – soft left, hard Left, and right of the centre party[4]. We expect a positive effect of electoral seat share of soft-left and hard-left party on the ratio of strikes to lockouts; and a negative effect of left of the centre party's share of electoral seats, in the state legislature, on the strike to lockout ratio.

The potential concern while using the instruments can be the potential multi-collinearity between the shares of electoral seats of the three

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[4] "Soft Left" includes the Indian National Congress and the National Congress Party. "Hard Left" includes the CPI and the CPI-M and other socialist parties. And, "Right of the centre party includes the Bharatiya Janata Party.

categories of political parties, as the electoral seats share of political parties may be negatively associated with each other. However, since there are various political parties contesting the elections and we chose primarily the national political parties only, so it cannot pose a severe concern in our estimation. We calculate the coefficients of correlation between the political parties, showing that the correlation between the party groups is only around 0.3, which is less likely to be inimical to our estimates (see Table 4.1).

Table 4.1: Correlation Coefficients of electorate seats of various political parties in state legislature.

	Bharatiya Janata party: share of seats	Congress Party: Share of Seats	Hard Left Party: Share of Seats
Bharatiya Janata Party: Share of seats	1.0000		
Congress Party: share of seats	-0.1041	1.0000	
Hard left party: share of seats	-0.3856	-0.2781	1.0000

Note: Since correlation coefficients between the share of electoral seats of the political parties are lower, so the issue of muliti-collinearity problem do not arise in the model.

4.4. Empirical Results

4.4.1. Impact of EPL and labor bargaining power on Informalisation.

The policy implications of our study are based on the 2SLS equation – equation 4. But before estimating it, we first estimate OLS equation – equation 2 – to see how the results turn up when the endogeneity concerns are not taken care off. As discussed in Section 4.3.1, the existing literature finds that in the capital-intensive industries using more technology, the employer tends to usher in regular workers. Therefore, to use the EPLI in the fixed effect model, we interact it with K/L ratio, which is a proxy for technology. As shown in column I Table 4.2, the coefficient on K/L ratio

is negative and highly significant, confirming the evidence in the existing literature mentioned in the Section 4.3.1. In column II of Table 4.2, we include the interaction of EPLI and K/L ratio, and number of strike per lockouts. The coefficient on the interaction is positive but not significant. We control for state development expenditure per capita per million on economic services as it has a bearing with state infrastructural facilities. Besides, we control for per capita net state domestic product and real output, which determine external and internal economies of scale, respectively (Mitra and Ural, 2008).

Before coming to the 2SLS equation, we first discuss the FSLS estimates. The estimates are presented in Table 4.3. With highly significant coefficients, well in line with our expectations drawn from the literature as stated in Section 4.3.3, the instruments seem to be strong enough. As expected, the number of strikes per lockouts increases with the increase in the share of electoral seats of Congress and the Hard left political parties, while Bharatiya Janata Party's seat share being negatively affecting the number of strikes per lockouts. All these findings are well in line with the implications of the literature mentioned in the Section 4.3.3. Moreover, the instruments are valid as suggested by the higher p-value against Sargan test shown in Table 4.4.

Now we come to the equation of our interest, i.e. equation 4, from which we derive the policy implications. The estimates are presented in Table 4.4. In column I, we are interested in examining the impact of instrumented ratio of strikes to lockouts, and that of K/L ratio. The coefficient on strikes per lockouts is positive and highly significant, suggesting that the informalisation is positively linked with labour bargaining power. This finding is in line with the implications of theoretical model propounded by Sen et al. (2013). The finding implies that employers use informal employment to debilitate the labour bargaining power and to curb the consequences of labour union movement, given that the informal workers are incapable of forming or

joining the union. The coefficient on K/L ratio, as shown in column I, Table 4.4 is quite in line with that in OLS regression – negative and significant. Now, in column II (Table 4.4) we introduce the interaction between K/L ratio and EPLI, so as to capture the link between stringency of EPL and informalisation. As shown, the coefficient on the interaction is positive and significant suggesting that in states with relatively stringent labour laws, if technology increases, the substitution takes place in favour of contractual employment. That is, the additional perspective costs, in the form of "firing costs" associated with EPL, serves as a disincentive to employment of regular workers. This finding supports the main proposition of the theoretical literature (mentioned in literature review section) that the EPL, for it imposes cost on employers to employer regular workers, would give rise to informalisation. The increase in the share of contractual worker when the employer uses more technology in rigid states – as suggested by the positive and significant coefficient on the interaction – indicates that the employer, perhaps, hires skilled contractual worker which may not necessarily be at par with the regular worker, just as to evade the brunt of labour laws. The coefficients on the strikes per lockouts and on the interaction term in 2SLS vary significantly from those in the OLS regression, reason being the presence of endogeneity in the latter model.

Table 4.2: Impact of EPL and labour bargaining power on informalisation (OLS results).

Dependent variable: Ratio of number of contractual workers to total number of workers.

	(I) OLS Results	(II) OLS Result
Constant	-5.075***	-5.123***
	(1.743)	(1.744)
Ratio of Strikes to Lockouts (log)	---	0.008
	---	(0.025)
Capital-Labor ratio (log)	-0.155***	-0.141***
	(0.045)	(0.046)
K-L Ratio*EPLI	----	0.055
	----	(0.051)
Control variables		
Development exp. Per capita pm	0.021	0.038
	(0.092)	(0.093)
Per Capita NSDP (log)	1.041***	1.048***
	(0.393)	(0.393)
Real output (log)	0.065*	0.065*
	(0.044)	(0.044)
Year effects	yes	yes
Industry effects	yes	yes
State effects	yes	yes
R-squared	0.697	0.697
No. of Observations	2772	2772

Note: (a) Figures in parenthesis represents robust standard errors clustered at industry-by-state level. (b) *=p<0.10, **=p<0.05, ***=p<0.01(c) Under Hausman test the null hypothesis of zero correlation between error term and explanatory variables is rejected. In other worlds, the hypothesis that the coefficient estimates are equal to one another is rejected, which suggests that random effects estimator is inconsistent. Therefore, in this study we use fixed effect model.

Table 4.3: First Stage Least Square Results.

	Standard Errors are Not Clustered	Standard Errors are Clustered
Constant	-0.038	-0.038
	(0.043)	(0.046)
Hard Left Parties: share of seats	0.415***	0.415***
	(0.116)	(0.213)
Congress: Share of seats	0.471***	0.471***
	(0.056)	(0.083)
Bharatiya Janata party: Share of seats	-0.033	-0.033
	(0.100)	(0.145)
R^2	0.755	0.755
No. of Observations	2772	2772
Year dummies	yes	yes
Industry-by-State dummies	yes	yes
State dummies	yes	yes

Dependent variable : Ratio of number of strikes to number of lockouts -- proxy for labour

bargaining power. Figures in parenthesis represents robust standard errors, and (c) *=p<0.10,

**=p<0.05, ***=p<0.01

Table 4.4: Impact of EPL and labour bargaining power on informalisation (2SLS results).

Dependent variable: Ratio of number of contractual workers to total number of workers.

	(I) 2SLS resutls	(II) 2SLS results
Constant	-7.907***	-7.921***
	(1.896)	(1.895)
Ratio of Strikes to Lockouts (log)	0.283***	0.280***
	(0.092)	(0.091)
Capital-Labor ratio (log)	-0.137***	-0.113**
	(0.043)	(0.045)
K-L Ratio*EPLI	----	0.105**
	----	(0.051)
Control variables		
Development exp. Per capita pm(log)	0.018	0.049
	(0.088)	(0.089)
Per Capita NSDP (log)	1.682***	1.677***
	(0.428)	(0.427)
Real output (log)	0.079**	0.078**
	(0.042)	(0.042)
Year effects	yes	yes
Industry effects	yes	yes
State effects	yes	yes
R-squared	0.681	0.682
No. of Observations	2772	2772
Sagan test (p-value)	0.242	0.230

Note: (a) Figures in parenthesis represents robust standard errors

 (b) *=p<0.10, **=p<0.05, ***=p<0.01

4.4.2. Impact of Market Volatility on Informalisation.

The existing literature shows that the "laxer EPL" does benefit the volatile industries relatively higher (Poschke, 2009), implying that the volatile industries are the ones worst hit by labour laws. Therefore, it can be argued that the volatile industries − for they require frequent employment adjustments − are more likely to use contractual employment to circumvent the cost of rigidities associated with EPL. To analyze the

impact of volatility on informalisation, we follow Krishna et al. (2009) by creating a dummy based on coefficient of variation of the annual growth of industry output in a given state. Using Median, we construct a dummy variable for high volatile industries and include it in the model along with control variables to capture its impact on informalisation. The results are shown in Table 4.5. We first run a regression without controls. In column I (Table 4.5) the coefficient on volatility is positive and highly significant. In column II Table 4.5, apart from the controls used in previous regressions, we also control for labour bargaining power and technology. As shown, the coefficient is still positive and highly significant. This finding offers support to Poschke (2009).

Table 4.5 Impact of Market Volatility on informalisation.
Dependent variable: Ratio of Contractual worker to total number of workers.

	(I) Without Controls	(II) with Controls
Constant	-0.747***	-8.683***
	(0.125)	(1.983)
High Volatility	0.419***	0.775***
	(0.174)	(0.214)
Ratio of Strikes to Lockouts (log)	----	0.283***
	----	(0.092)
Capital-Labor ratio (log)	----	-0.137***
	----	(0.043)
Development exp. Per capita pm	----	0.018
	----	(0.088)
Per Capita NSDP (log)	----	1.682***
	----	(0.428)
Real output (log)	----	0.079*
	----	(0.042)
Year dummies	yes	yes
Industry dummies	yes	yes
State dummies	yes	yes
R-squared	0.662	0.681
No. of Observations	3276	2772

Note: (a) Figures in parenthesis represents robust standard errors clustered at industry-by-state level, (b) *=$p<0.10$, **=$p<0.05$, ***=$p<0.01$

4.5. Conclusion

While industrial business is struggling to maintain its growth at higher trajectory, the researchers and policy makers are raising questions regarding the relevance of employment protection legislations (EPL), which, analysts claim, does neither ameliorate the plight of the workers nor let the business grow. However, despite the substantial body of contract labor laws strictly prohibiting contractual employment in core activities, the incidence of contractual employment has registered an unprecedented growth over the last two decades, cutting across non-core as well as core activities. Provoked by the unfair exploitation against contract workers, the labour unions in India have been strongly resisting the contractualisation, demanding job security for the workers. Though alarming, the uncontrolled rise in informalisation has not received adequate attention of policy makers. What is more worrying is the fact that there are evidences suggesting that the overdependence of informal employment may impinge on efficiency and productivity growth of industries, and thus drive them out of the competitive markets, in the long run.

In this study, we investigate the link between labour laws and informalisation besides the role of other factors in driving the use of contractual workers in Indian manufacturing sector. Using three-dimensional panel data on 28 industrial sectors, between 1999-00 to 2007-08, across 13 major states of India, we find that the incidence of informalisation is directly linked with EPL, volatility, and labour bargaining power.

The findings of this study have major implications for the theoretical literature which maintains that EPL, by creating rigidity, can hold back productivity and employment growth in the industrial business. Besides, the findings also suggest that the Indian state has failed to translate the pro-worker labour laws into an actual social security for the workers.

Despite the plethora of labour regulations, the growth of informal employment has been on upward spiral, with blatant exploitation of the contract workers.

Contractualisation may offer numerical flexibility to employer; however, since informal worker is inferior labour input, there may be a trade-off between "flexibility" and "inefficiency" – associated with contractualisation – which calls for earnest attention of employers as well as government policy makers. The whole gamut of labour laws, particularly employment protection legislations, must be rationalized to ensure that the employers are provided with adequate flexibility and the workers' rights are saved from being infringed upon. The focus of the debate on labour regulations ought to be on the implementation and enforcement of the laws in papers.

Chapter 5

Labour Laws and Total Factor Productivity in dualistic Labour Market.

5.1. Introduction

There have been growing demands from employers and the neo-liberalists for the abrogation of pro-worker employment protection legislations (EPLs) to bring flexibility in the labor market. The critics of pro-worker labor laws hold EPL responsible for the sluggish performance of industrial business in developing countries. Theoretical literature in labor economics explain that EPL has the potential of creating rigidities in employment adjustment by raising the dismissal cost (see, for example Nickel, 1986; Hopenhayan et al., 1993). The findings of empirical studies on EPL, however, offer a mixed picture (Betcherman, 2014). While Messina et al. (2007) and Besley and Burgess (2004) in their econometric analysis for India and European countries (respectively) find that EPL does reduce employment and productivity, several other empirical studies conclude that it has a minimal impact on industrial performance (see, for example, Bertola 1990 and Roy 2004).

The debate on labor regulations has taken centre stage over the last two decades and is being echoed by the state also. But surprisingly, the focus of the debate is confined to labor market flexibility alone, ignoring the abysmal implementation of the labor laws and the fallout of the emerging trends in the labor markets (such as informalisation) on workers. For the last two decades, there has been a sharp growth in informal employment (it includes temporary workers; contract workers; non-standard workers and casual workers) cutting across developing as well as developed countries. The informalisation of employment has been growing in most of the OECD countries, including United States (OECD, 2009). Informal employment has gone up notably in European and Scandinavian countries

also (CIETT 2007). In the Canadian labor market, jobs have become more precarious with the upward trend in temporary (or contract) employment, which is not covered by the labor laws (Cranford 2003). Between 1997 and 2003, temporary employment in Canada has increased twice as fast as regular employment (Fuller 2007). Employers have been justifying the informalisation of employment by stressing the importance of flexibility necessitated, purportedly, by the increasing market volatility in the recent years. Although the whole gamut of labor legislations exist more in books than in praxis, they have been treated as anti-business (Sood et al., 2014). The neo-liberalists believe, that laxer labor laws will stimulate investment and employment generation.

In this study, we investigate the tenability of the on-going 'labor market rigidity debate' in dualistic labour market context and figure out its repercussions for the workers. Using econometric analysis, this study finds that EPL does not affect total factor productivity, under dualistic labor market. The effect of EPL is not significant even in high volatile industries, which require employment adjustments frequently. The study is based on Indian manufacturing sector, which represents a perfect case of dualistic labor market with stringent body of job security legislations in the paper (OECD 2007). The findings of this study indicate that dualism in workforce – co-existence of formal and informal employment – does increase the vulnerabilities of workers, while enabling the employers to overpower the labor unions.

The rest of this chapter proceeds as follows. Section 5.2 describes labor market dualism in the Indian context, and the repercussions of the latter for the workers. Section 5.3 takes review of previous literature on economic effects of EPL. Section 5.4 and 5.5 describes the methodology, while Section 5.6 describes the empirical results. Finally, Section 5.7 concludes the study.

5.2. Labor market dualism in Indian manufacturing sector

In Indian state, the plethora of labor laws governing the industrial relations in Indian manufacturing have been the centre of attention of economists and researchers from across the world, more so since the post liberalization period, which started in 1991. There is a perception among some economists that the industrial inertia in India has been mainly caused by labor market rigidity, which is in turn attributed to EPL. The calls for pro-employer amendments on existing labor laws have also resonated repeatedly in the government official reports in recent years as the Indian state seems to have giving into the rigidity debate (see, for example, SNCL 2002; PCTEO 2001).

The most debatable set of job security related labor laws in India is implemented under the Industrial Disputes Act (IDA), 1947 and the Contract Labor Act (CLA), 1970. The chapter V-B of the IDA, 1947 requires the firms employing 100 or more workers to obtain government permission for layoffs; retrenchment; and closures. It is believed that employers have to go through a lengthy procedure to finally get the permission (Battacharjea 2006). Besides, under Section 25-B of the Industrial Disputes Act, a worker can seek regularization of his/her service after working continuously for more than 240 days. Further, under Section 25-F of the Industrial Disputes Act, employer employing greater than 100 workers has to pay a 'severance cost'[4] besides issuing a formal notice (to the workers) in the event of layoff or retrenchment. On the other hand, the Contract Labor Act, 1970 provides for the contractual employment in the non-core activities of firms. The Section 10 (1) of the Act provides for the "prohibition and abolition" of contractual employment as and when required. Meanwhile, one of the principal unfulfilled demands of the Indian labor union is the so-called 'automatic absorption upon abolition': in the event of abolition of contract employment, the contract workers involved must be absorbed, in the firm, and regularized (Sunder 2012). The employers, however, have managed to fight off such demand of trade

unions thus far. In addition, under rule 2 (V)-(a) of the Contract Labour Act, employers are required to pay equal wages to contractual and regular workers if they perform the same type of work.

Under article 246 of the Indian constitution, the 'Labor' (as a subject) is incorporated under the concurrent list and thus both the Central and the State governments are competent to enact laws and/or make amendments in the existing labor laws. Thus, apart from the aforementioned central labor laws, there are more than 50 state-level major labor laws, which are related to job security (Sunder 2012). However, it is argued in the literature that the government has failed to translate the bulk of such pro-worker labor laws into a real social security for workers (Sood et al., 2014). The EPL wields a negligible influence on the 'hiring and firing policy' of Indian manufacturing industries. As noted by Sapkal (2014), there is a glaring discrepancy between the de jure job security (job security in paper) and the de facto (actual job security) in India. Besides, there is evidence of stealthy reforms (Nagarj, 2004). Despite the existence of EPL, more than 1.1 million workers were fired out just between 1995-96 and 2000-01, hinting at the ineffectiveness of job security regulations in the midst of weak enforcement machinery (ibid).

Having described the pro-worker labor laws forming the core of the ongoing debate on labor market rigidity in India, let us investigate the merits of the 'rigidity school of thought'. The business activities of the firms in the Indian manufacturing sector, and elsewhere also, are generally classified into core and non-core activities. While core includes the essential activities of the enterprise (e.g. production process, sales etc), non-core includes the ancillary activities like catering, cleaning etc. Generally, regular workers are perceived to be more suitable for core activates of the enterprise and the "labour need" in such activities remains by and large stable. On the other hand, emphasis is placed on the use of contract labour in non-core activities in which employer requires greater flexibility. Recognizing the need of flexibility in non-core business

activities, the Contract Labor Act, 1970 does allow the use of contractual employment, which is inherently flexible as it does not come under the ambit of job security regulations. Thus, given the nature of core-business activities of the enterprise, one can argue that the need of frequent employment adjustments in such areas must not arise at all. Thus, in principle, the demands for flexibility must be limited to well defined, non-core activities and those activities that are highly affected by the short-run ups and downs in the market.

While putting the employers' demands for flexibility, against the existing amount of flexibility in the Indian manufacturing, one may conclude that the ongoing call for labor market flexibility is slightly in favour of employers. For the last two decades, Indian manufacturing sector has registered a spiraling growth in contractual employment, which, as mentioned earlier, falls outside the purview of employment protection legislations. Contractual employment has increased from 13 percent in 1993-94 to 35 percent in 2010-11 (see figure 5.1). There are evidences that contractual employment exists, significantly, even in the core activities of business (NCEUS 2009). The neo-liberalists claim that the sharp growth in informal employment is mainly a result of rigidity created (purportedly) by EPL (Goldar, 2009; Sen et al., 2013). However, while assessing the condition of contractual workers in India, this line of thought seems to be too hard to defend, though informalisation (as seen in the last chapter) may be linked with labour laws. Ideally, there must be a premium on 'flexible labor': employer may offer relatively higher wages to contract worker as long as the former is desperate to obtain flexibility. However, on the contrary, the average daily nominal earning of the contract workers in Indian manufacturing, as per annual survey of industries (ASI) data for the period 2003-04 to 2010-11, were just 71 % of the permanent workers (See figure 5.2). Using the consumer price index for industrial workers (CPI-IW: base= 2001), we calculated the real daily earnings of contract workers, and that of the directly employed workers that are covered by

EPLs. The figure 5.3 shows that there is a big gap between daily earnings (in real terms) of contract workers and regular workers. Generally, the earnings of workers seem to be growing only marginally over time (see figure 5.3). Thus, blaming the labor laws for the informalisation, seems to be rather unfair.

Figure 5.1: Share of contractual employment in Indian manufacturing sector.

Source: Annual Survey of Industries (ASI).

Moreover, since contract workers are not represented by any of the registered labor unions either, the unfair exploitation among the former in the form of longer working hours and hostile working conditions besides scanty wages, is common. Besides, unlike regular workers, contract workers in India do not receive on-the-campus training and not happen to be the beneficiary of the firm-specific skill enhancement programs, resulting into lower labor productivity and incompetency among such workers in the long-run.

69

Figure 5.2: Average daily nominal earnings (in Rs.) of contract workers and directly employed workers.

Average daily nominal earnings in (Rs.)
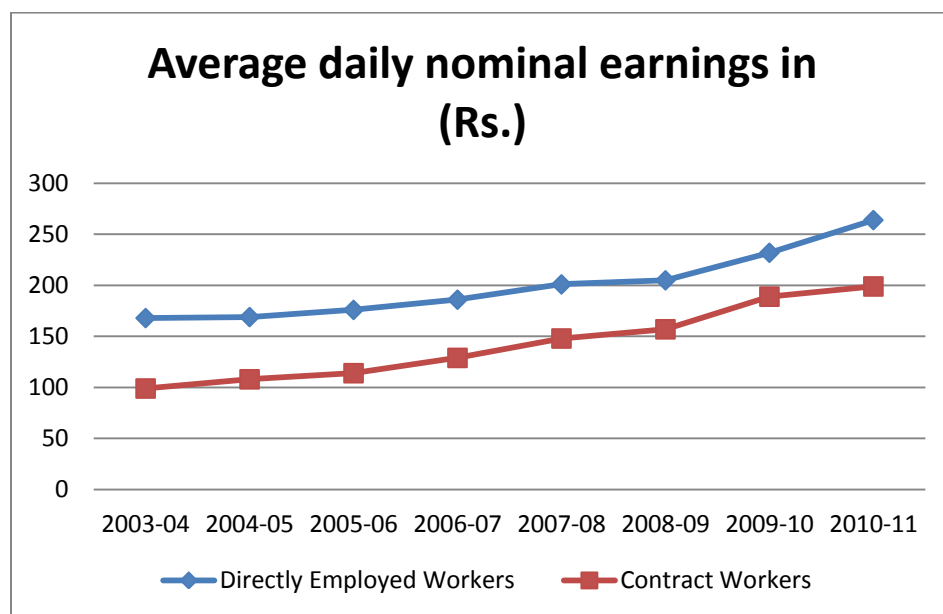
Source: Annual survey of Industries (ASI).

Figure 5.3: Average daily real earnings (in Rs.) of contract workers and directly employed workers.

Average daily real earnings in (Rs.)
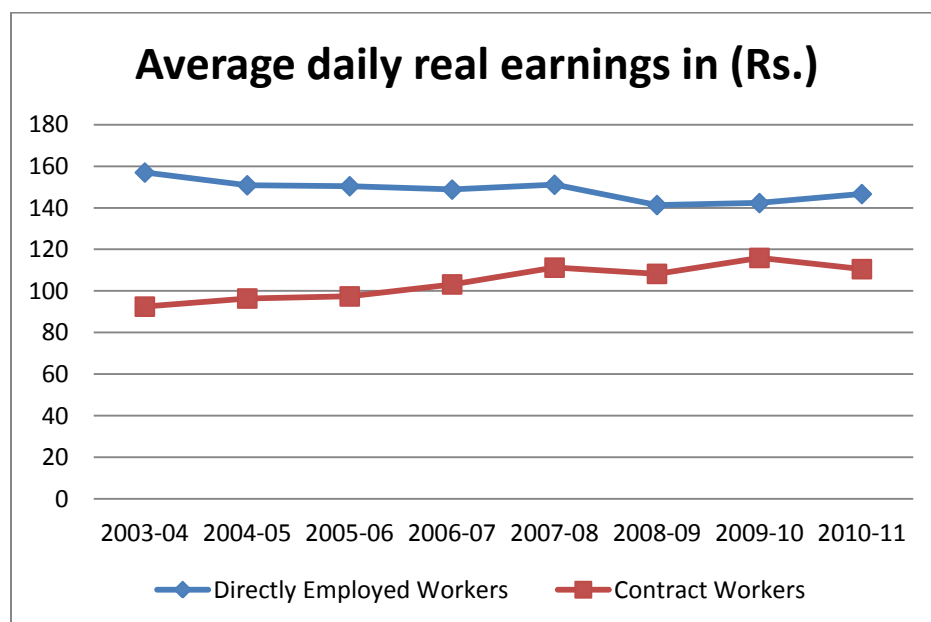
Source: Annual survey of Industries (ASI).

Thus, despite the huge body of labor laws, it is the worker, who actually bears the fallout of tightening competitive pressures driven by the rising tide of globalization in the commodity markets. Given the blatant exploitation of informal workers, the emerging dualism in the Indian formal labor market seems to be an outcome of employers' aggressive business practices. At the same time, the Indian state has been rather apathetic (towards the worsening condition of worker) and has played a role of a facilitator of stealthy neo-liberal setting to realize the growth agenda (Kapoor, 2014; Sood et al., 2014).

5.3. Previous literature

The debate on the impact of employment protection legislations (EPLs) on productivity is rooted in Nickel (1986); Hamermesh (1993); and Hopenhayn and Rogerson (1993). These studies conclude that EPL has the potential to create inefficiencies in the business and reduce productivity. The recent empirical literature on economic effects of job security, offers an inconclusive picture. For example, while studies like Bassanini (2007); OECD (2007); Bassanini et al. (2009); and Cingano et al. (2010) find negative impact of job security regulations on productivity growth in the OECD countries, several other empirical studies find positive effect (see, for example, Nickell,1999; Koeniger, 2005; Belot et al., 2004).

In the Indian context, Dougherty et al. (2013) in his firm level analysis for Indian manufacturing sector find higher total productivity in the firms operating in states with flexible labor market. Similarly, using the BB index, Mitra and Ural (2008) find positive effect of industrial de-licensing on total factor productivity, in relatively flexible states.

The basic assumption of these studies is that the job-security regulations can create rigidity which in turn gives rise to in-optimality and consequently there will be lower productivity. However, Roy (2004) in his empirical study finds that the EPL had a very minimal effect on employment adjustment. He divides the sample period into two -- before 1975-76 when the job-security regulations were made further stringent,

and after it – and finds that rigidity in employment adjustment was not significantly higher post 1975-76. Therefore, in view of this finding, the question arises that when rigidity argument itself looses the ground, then how come the abovementioned empirical studies find negative effect? Thus, it is necessary to look deeper into methodological framework of the studies finding negative impact of EPL on productivity.

Among several serious methodological issues, the most serious methodological concern that is common to all the aforementioned studies, is the problem of 'attribution bias' which, in this context, means wrongly attributing the lesser industrial productivity in a given state to EPL. Though previous literature did use several state-specific control variables to eliminate the attribution bias, it has failed to control for the productivity differential existing across the states due to labor market dualism, as discussed in Section 5.2. The literature on informalisation shows that informal worker is inferior and less-productive labor input as compared to regular formal worker (see, for example, Maiti, 2013; Sen et al., 2013). On the other hand, evidences show that in the states having relatively rigid labor market, the firms do use large number of contract workers to circumvent the EPL (Goldar, 2009; Sen et al., 2013). Going by such evidences, the states with rigid labor markets are likely to have a dominant share of contractual workers, and due to the overuse of contractual employment, the industrial productivity may decline. Hence, before attributing the lesser productivity in rigid states to EPL, it is crucial for the empirical researchers to control for (or to take into account) the productivity differential between informal and formal workers. This is what the existing literature on EPL has failed to do, resulting into exaggeration of the debate on job security. Furthermore, these studies also fail to control for the flexibility already enjoyed by the employers due to contractual (flexible) labor. Given the fact that contractual employment constitute on an average about 35 % of total work force in the Indian formal manufacturing sector, the firms have (arguable) enough flexibility

to adjust the size of employment if and when required by adjusting the number of contract workers.

Our study contributes to the theoretical and empirical literature on labor laws by investigating the economic effects of EPL in dualistic labor market context while going around the abovementioned limitations of the previous literature. Unlike previous literature, we take into account (or control for) the productivity differential arising due to dualism in workforce. Simultaneously, we are also able to control for the flexibility already enjoyed by the firms due to contractualisation. The basic objective of this study is to figure out whether job security regulations harm productivity in the industries. Besides, we also study the impact of informalisation on productivity.

5.4. Empirical methodology

To investigate the impact of employment protection legislation (EPL) and informalisation on total factor productivity (TFP)[5], we utilize a panel dataset on 28 industrial sectors across 13 major Indian states for time period 1999-00 to 2007-08. Total Factor Productivity (TFP) is calculated by Data Envelopment Analysis (DEA)[6]. To capture the impact of contractualisation besides controlling for the productivity differential arising due to contractual employment, we include ratio of permanent

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[5] Total Factor Productivity (TFP), also called as multi-factor productivity, is a variable that accounts for effects in total output not caused by traditionally measured inputs of labor and capital. If all inputs are accounted for, then TFP can be taken as a measure of the long-term technological change or technological dynamism. It is generally considered to be a proxy for the efficiency measure in the industries. Total Factor Productivity measure of growth is preferred over other measures such as labour productivity etc. (see for e.g. Baier et al., 2006). Many believe that labor productivity is rather a cruder measure (see e.g. May et al., 2002). However, it is debatable in academic and policy circles as to which measure is best.

[6] Data Envelopment Analysis (DEA) is a non-parametric mathematical programming approach to frontier estimation (Coelli, 1996). It involves the use of linear programming methods to construct a non-parametric piecewise surface (or frontier) over the data so as to be able to calculate the efficiencies relative to this surface. The computer program can consider a variety of models. One of them is the application Malmquist DEA method to panel data to calculate indices of TFP change (ibid).

workers to total number of workers (PW/TW) in the model. The basic empirical model is specified as follows:

$$y_{ist} = \alpha_o + \alpha_1 PW/TW_{ist} + \alpha_2 PW/TW_{ist} * EPLI_s + a_k \sum a_k X_{kist} + \gamma_i + \gamma_s + \delta_t + \varepsilon_{ist}$$

Where y_{ist} is log (TFP) for industry i, state $s,$ and year t. PW/TW is the ratio of permanent (regular) workers to total number of workers, or the share of regular workers in total employment. EPLI is a time-invariant index of stringency of employment protection legislation (see details in chapter 3, Table 3.1). $\sum X_{kist}$ is the vector of industry-specific and state-specific control variables. All the variables in the model, other than EPLI, are in log forms. λ_i, γ_s, and δ_t are industry-specific, state-specific and year-specific fixed effects, respectively, taking care of omitted variables bias from unobservable characteristics. Finally, ε_{ist} is the error term.

The coefficient on PW/TW captures the impact of increase in relative share of permanent workers on TFP[7]. We interact the EPL index (EPLI) with the ratio of PW/TW so as to control for the productivity differential and the flexibility arising due to dualism in workforce. The coefficient on the interaction gives us the impact of increase in rigidity (on TPF) in the industries having relatively higher share of permanent worker. Thus, the productivity differential and the flexibility associated with contractual workers are taken care of to a large extent. The reason as to why we interact the EPLI with PW/TW rather than interacting it with CW/TW (where, C is number of contractual workers) is that we are interested in pursuing our analysis from the rigidity perspective. Apart from including the fixed effects, we also include a set of relevant state-specific and

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[7] Since total number of workers (TW) in the Indian manufacturing is the sum of contractual and permanent workers, the coefficient (inversely) captures the impact of contractualisation, which is same as informalisation.

industry-specific control variables so as to take care of omitted variable bias (see description in section 5.5.1). We also measure the impact of EPL on high volatile industries by interacting the EPLI with a dummy variable that takes value 1 for the high volatility industries (see section 5.5.2).

We take care of potential autocorrelation problem in our model by estimating the robust standard errors clustered at the state level (see Bertrand et al. 2004).

One of the potential concerns in our model is the endogeneity problem in PW/TW. The stringency of EPL, given that EPLI appears an independent variable in the model, can influence the share of permanent worker, causing endogeneity in PW/TW. Besides, the share of permanent worker can also be driven by the variation in TFP growth appearing as a dependent variable; thus aggravating thereby the endogeneity concerns in the model.

To overcome the endogeneity issue, we follow instrumental variable two stage least square (IV 2SLS) estimation. Under this procedure, we first estimate PW/TW, using some valid instruments – first stage least square. Then, we incorporate the 'estimated (or predicted) PW/TW' in our original equation – second stage least square (2SLS). The predicted PW/TW is free from endogeneity. As noted by Botero et al. (2004), the left political parties are in favor of enacting the pro-worker stringent labor legislations and they do respond (quite often) positively to the labor union demands. Similar evidence is found in the Indian context also (Aghion et al., 2008; Cali and Sen, 2011; Sen et al., 2013). Therefore, the share of permanent or contract workers is likely to have a bearing with the relative share (in electoral seats in the state legislature) of political parties with different fundamental political orientation. Thus, the share (in the electoral seats) of a political party, serves as an appropriate instrument for PW/TW ratio. The instruments are as follows: Congress – left of centre; Hard left parties;

Soft left parties; and the Bharatiya Janata Party – right of the centre[8]. Besides, we use the ratio of number of strikes to number of lockouts – proxy for the 'bargaining power' of permanent workers – as the fifth instrument[9].

5.5. Empirical Results

5.5.1. Impact of EPL and contractualisation on total factor productivity (TFP).

We first estimate the effect on TFP of EPL and contractualisation under the OLS framework; and then under the Instrumental Variable Two Stage Least Square (IV 2SLS) framework. The difference between the OLS and the 2SLS estimates arises due to the problem of endogeneity, which may drive the estimates under the former approach. Therefore, for the policy implications, our focus remains on 2SLS estimates. The OLS results are presented in Table 5.1. In the first regression, we are interested in analyzing the effect of contractualisation on total factor productivity (TFP). As it is shown in column I, Table 5.1, the coefficient on PW/TW is positive and highly significant; indicating that higher share of permanent workers has a positive impact on TFP. In other words, it implies that contractualisation has negative impact on TFP. Then, we introduce the EPL index (EPLI) by interacting it with PW/TW in the second regression.

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[8] Congress = Indian national congress and Nationalist congress party (b) Hard left parties =Communist party of India and Communist party of India Marxist (c) Soft left= Socialist parties. The data on share of seats of these political party groups are taken from the Election commission of India website. Between 1999-00 and 2007-08, there were at least two rounds of elections, causing a pronounced variation over time in the share of electoral seats hold by the political parties.

[9] The ratio of number of strikes to number of lockouts is an appropriate proxy for worker bargaining power. Higher value of it represents higher worker bargaining power and vice versa. We expect that bargaining power of permanent worker is negatively associated with permanent employment. In other words, the higher the bargaining power of permanent worker, the higher is the contractualisation.

76

The coefficient on the interaction, as shown in column II Table 5.1, is negative but insignificant. As explained in Section 5.4, the coefficient on the interaction captures the effect of increase in rigidity of EPL (on TFP) in the industries having relatively higher share of permanent workers. Thus, the insignificant coefficient on the interaction term indicates that EPL does not harm TFP when dualism exists in the labor market. In both the regressions, we control for fixed effects and year effects to eliminate the omitted variable bias. Besides, we also include a set of relevant control variables such as fixed capital; per capita net state domestic product (PCNSDP); development expenditure (per million populations); per capita electricity per million populations. The variables such as electricity and development expenditure (taken as proxies for infrastructure) and fixed capital are generally considered to have a positive effect on TFP (see e.g. Anders, 2007). Similarly, the PCNSDP controls for the economies of scale (Mitra and Ural, 2006).

The final results (the 2SLS estimates) are presented in column I and II, Table 5.2. For the First Stage Least Square (FSLS) estimates, see Appendix of this chapter. As shown in column I and II of Table 5.2, the coefficient on the interaction is negative but insignificant, indicating that EPL does not affect TFP. Interestingly, the coefficient on the instrumented PW/TW in column I and II Table 5.2 is positive and highly significant, indicating that TFP is higher in the firms using relatively higher share of permanent workers; and further indicating that there is a negative impact of contractualisation on TFP. The coefficients on control variables such as fixed capital and electricity are positive and significant and are in line with the existing literature. Likewise, the coefficients on development expenditure and PCNSDP are positive, though not significant. Finally, in these regressions, we also include a proxy for the industrial relations – man days lost due to strikes and lockouts.

Table 5.1: Impact of EPL and Informalisation on Total Factor Productivity (TFP). The dependent Variable is Log Total Factor Productivity (TFP).

Variables	(I) OLS	(II) OLS
Constant	-1.932**	-1.938**
	(0.752)	(0.755)
Log PW/TW	0.041***	0.041***
	(0.013)	(0.013)
Log PW/TW * EPLI	----	-0.004
	----	(0.012)
Control variables	Fixed capital(lag1), PCNSDP, Development exp. Pm Per capita Electricity p.m.	Fixed capital(lag1) PCNSDP, Dev. Exp. pm Per capita electricity pm.
State-Industry Fixed Effects?	Yes	Yes
State Effects ?	Yes	Yes
Year Effects?	Yes	Yes
No of Obs.	2548	2548
Overall R^2	0.756	0.771

Note:(a) Figures in parenthesis represent robust standard errors clustered at state level.(c)
*=p<0.10, **=p<0.05, ***=p<0.01.

(b) Under Hausman test, the null hypothesis of zero correlation between error term and explanatory variables is rejected. In other worlds, the hypothesis that the coefficient estimates are equal to one another is rejected, suggesting that the random effects estimator is inconsistent. Therefore, in this study we use fixed effect model.

There are evidences in the literature indicating that a cordial relation between labor and management has a positive impact on industrial productivity (see e.g. Kumar, 2013). The coefficient on the number of man-days lost due to strikes and lockouts is negative and highly significant, suggesting that adverse industrial relations have a detrimental impact on TFP. This finding is thus in line with the findings of the previous literature. We also carry out a robustness check of the EPL index (EPLI) used so far in this analysis. We use the OECD index instead of the EPLI to check whether our results are robust to a different measure of

EPL. As shown in Table 5.2, column III, the results are in line with the earlier estimates.

Table 5.2: Impact of EPL and Informalisation on Total Factor Productivity (TFP) -- 2SLS results and Robustness checks. The dependent variable is log of Total Factor Productivity (TFP).

Variables	(I)	(II)	(III)
	2SLS	**2SLS**	**2SLS**
Constant	-1.211*	-1.200*	-1.556*
	(0.714)	(0.716)	(0.806)
Log Ratio of PW/TW (instrumented)	0.173**	0.167***	0.023***
	(0.070)	(0.065)	(0.007)
Log (Instrumented PW/TW)*EPLI	----	-0.0.15	----
	----	(0.015)	----
Log EPLI (OECD)*PW/TW	----	----	-0.002
	----	----	(0.005)
<u>Control Variables</u>			
Log Fixed Capital (lag1)	0.016*	0.016*	0.012***
	(0.010)	(0.010)	(0.004)
Log Per capita Electricity (lag2)	0.154**	0.152**	0.084*
	(0.088)	(0.086)	(0.055)
Log Man-days lost due to Strikes and lockouts (lag2)	-0.037*** (0.009)	-0.036*** (0.009)	-0.040** (0.015)
Log per capita development Expenditure per million	0.034 (0.047)	0.033 (0.046)	0.021 (0.034)
Log PCNSDP	0.151 (0.151)	0.149 (0.150)	0.257* (0.177)
Industry-by-state dummies?	Yes	Yes	Yes
State dummies?	Yes	Yes	Yes
Year dummies?	Yes	Yes	Yes
No of Obs.	2296	2296	2548
Overall R^2	0.747	0.734	0.782
Sargan test (p-value)	0.628	0.634	0.630

Note: (a) Figures in parenthesis represent robust standard errors

(b) *=p<0.10, **=p<0.05, ***=p<0.01

5.5.2. Impact of EPL on total factor productivity (TFP) in highly volatility industries.

Here, we analyze the impact of EPL (on TFP) in highly volatile industries, or in those industries that are more vulnerable to market fluctuations. To measure the volatility, we follow Krishna et al. (2009). We first calculate the coefficient of variation of the annual growth rate of industrial output. Then, we categorize the industries into 'highly volatile' and 'less volatile', using median formula. Then, we include dummy for the highly volatile industries, in the model. The results are presented in Table 5.3. First, we are interested in analyzing the impact on TFP of volatility alone. As shown in column I, the coefficient on volatility is negative and highly significant, suggesting that the highly volatile industries do experience relatively lesser TFP growth. Then in column II Table 5.3, we interact the EPLI with volatility and PW/TW. The coefficient on the interaction captures the impact (of EPL) in the highly volatile industries having higher share of permanent workers. As shown in column II, the coefficient is negative but insignificant, suggesting that EPL does not have any effect even in volatile industries, though 'volatility' by itself affects TFP. This, in turn, indicates that employers do enjoy enough flexibility due to informal employment.

Table 5.3: Impact of Volatility on Total Factor Productivity (TFP). The dependent Variable is Log Total Factor Productivity (TFP).

Variables	(I)	(II)
	OLS	**OLS**
Constant	-1.873**	-1.864**
	(0.830)	(0.825)
Log PW/TW	0.041***	0.041***
	(0.014)	(0.014)
High Volatility	-0.135**	-0.134**
	(0.071)	(0.071)
Log PW/TW*High Volatility*EPLI	----	0.008
	----	0.019
Control variables	Fixed capital (lag1), PCNSDP, Development exp. Pm Per capita Electricity p.m. Man-days lost to strikes/lockouts	Fixed capital(lag1) PCNSDP, Dev. Exp. pm Per capita electricity pm. Man-days lost to strikes/lockouts
State-Industry Fixed Effects?	Yes	Yes
State Effects ?	Yes	Yes
Year Effects?	Yes	Yes
No of Obs.	2548	2548
Overall R^2	0.818	0.834

Note:(a) Figures in parenthesis represent robust standard errors clustered at state level. (b)
*=p<0.10, **=p<0.05, ***=p<0.01

5.6. Conclusion

For the last two decades, employers have been up against employment protection legislations (EPLs), claiming that such pro-worker labor laws hamper investment and hurt productivity by creating rigidity in the business. The discourse on EPL has been growing in developing as well as in developed countries. However, the empirical literature measuring the economic effects of EPL on industrial performance, offers an inconclusive picture. In this study, we argue that contemporary labor markets are mostly flexible. The main motive behind the ongoing debate (on EPL) mooted by employers and the neo-liberalists is to weaken the labor unions, and reduce the bargaining power of workers to carry forward the

81

aggressive business strategy. Our study shows that the workers (in India) with no coverage of job security regulations (i.e., informal workers) earn 30 % percent less wages than those with some job security coverage. Using a panel dataset for the Indian formal manufacturing sector, we empirically investigate the effect of EPL on total factor productivity (TFP) of the industries. Our results indicate that EPL does not affect TFP. We do not find significant impact of EPL even in highly volatile industries in which the need of flexibility is relatively higher. Our findings suggest that firms do (already) enjoy substantial flexibility due to dualism in the workforce. Employers use contractual employment and thereby ward off the EPL to reduce the bargaining power of workers, so as to be able to exploit them. The pro-worker labor laws may exist hugely in papers, but they hardly provide any job security to the workers, reason being the apathy among the states towards the worsening condition of workers in this neo-liberal phase of the global economy. With the state playing the role of a facilitator of stealthy neo-liberal setting, the employers not only find it easy to evade the labor laws, they are also able to pass the brunt of the increasing business risks (due to globalization) on to workers by infringing upon their other rights as well. The findings of this study suggest that the debate on labor regulations must be inclusive, and the main focus must be on how to combat the informalisation. The genuine issues such as weak enforcement of labor laws, deplorable working conditions, inefficient labor administration machinery and cumbersome grievance redressal machinery must be the centre of attention.

Appendix

First Stage Least Square (FSLS) estimates

To remove the endogeneity in the model, we regress the PW/TW on five external instruments discussed in Section 5.4. The estimates derived from this regression are called as Instrumental Variable First Stage Least Square (IV FSLS) estimates. For checking the strength and validity of these

instruments, we present the FSLS estimates in Table 5.4. The coefficients on all of the instruments are highly significant except that on the Bharatiya Janata Party. As expected, the Hard Left political Party does encourage higher use of permanent workers, followed by the Soft Left Party and the Congress. The coefficient on the Bharatiya Janata party is negative, though not significant, indicating that contractual employment rises with the rising share of electoral seats of this party. Finally, the coefficient on the ratio of strikes to lockouts is negative and highly significant. It shows that higher bargaining power of permanent workers do induce higher usage of contractual labor. Moreover, the Sargan test score presented in Table 5.2 (column I) is not statistically significant, suggesting that the instruments are valid.

Table 5.4: First stage least square (FSLS) results. Dependent variable is log ratio of number of permanent workers to total number of workers.

Variables	FSLS
Constant	-0.009
	(0.072)
Soft left party-share of seats (Lag2)	0.696**
	(0.285)
Hard left party-share of seats (Lag2)	1.08**
	(0.424)
Congress party-share of seats (Lag2)	0.174*
	(0.094)
Bharatiya Janata party (Lag2)	-0.094
	(0.168)
Strike to Lockout ratio-man-days lost (Lag2)	-0.001***
	(0.0005)
Industry Dummies?	Yes
State dummies?	Yes
R^2	0.671
Observations	2296

Note: Figures in parenthesis represent robust standard errors

*=p<0.10, **=p<0.05, ***=p<0.01

Chapter 6

Labour Laws, Employment and Labour Productivity

6.1. Introduction

Theoretical literature in labour economics explain that by creating rigidity in employment adjustment, pro-worker employment protection legislations have the potential to breed inefficiency in the firms. The empirical literature analyzing the impact of employment protection legislation (EPL) on productivity offers a mixed picture. In our previous chapter, we noted certain limitations of the earlier literature, and analyzed the impact of EPL on total factor productivity (TFP). After controlling for the productivity differential among contract and regular workers, and the flexibility that employers enjoy with non-permanent employment, we find that EPL does not affect TFP even in highly volatile industries.

Although there are substantive ambiguities in theoretical literature regarding the impact of EPL on employment and labour productivity, it is widely held that the sluggish employment generation in industries is due to restrictive labour laws. The National Democratic Alliance (NDA) government has recently pushed through a proposal to amend the existing labour legislations, which is, what the Central Trade Unions (CTUs) called as, a "unilateral" move by the current dispensation – to pave the way for employers enabling them retrench or lay off workers at will and pursue large-scale contractualisation. The reformists conceive the government's step to amend the labour laws, which is likely to entail offering more flexibility to employers through probably biting into employment protection legislations (EPL), as a need of the hour to put the manufacturing at higher growth trajectory.

In the Indian context, few econometrics based research studies show a negative impact of labour law on employment and labour productivity. However, the empirical research investigating the direct effect of EPL on rigidity does not show significant signs of distortion in the hiring and firing policy of employers following the implementation of such laws (Roy, 2004). The basic assumption of the theoretical literature on EPL is that the latter may create rigidity in employment adjustment and thereby it has the potential of restricting both hiring and firing of workers, which would ultimately translate in less productivity and possibly less employment. However, keeping in view the findings of Roy (2004), the negative impact found in few research studies on labour productivity and employment is slightly confounding; hence, it requires further investigation in the methodology utilized by these studies. From the implementation side, researchers argue that the impact of EPL may vary from one industry to other, depending upon their labour intensity and the composition of employment – contractual vs regular employment.

In this study, the authors investigate the impact of pro-worker EPL on employment and labour productivity in dualistic labour market involving significant use of contractual workers falling outside the purview of EPL along with regular workers. The analysis also takes into account the labour intensity of the industries, using dummy variable technique in interactive form. As it is seen in the previous chapter that analyzing the economic effects of EPL in dualistic labour such as there in the Indian context requires controlling for certain phenomenon. These include: 'productivity differential', which potentially may arise among the informal and formal workers; and the second is the 'flexibility' that employers may enjoy due to the use of contract workers. As the results in the previous chapter after controlling for such factors show that the EPL does not have a significant impact on total factor productivity; it would be interesting therefore to see how the results come up if similar methodology is followed to estimate the impact of EPL on labour productivity. Besides, it would be interesting to

see if EPL has any impact on employment. The study is based on 28 industrial sectors across 13 states of India (28x13 = 364 industries) for the period 1999-00 to 2007-08. State level variation in EPL is exploited upon to capture the impact of the labour laws on employment and labour productivity.

6.2. Review of previous literature

In the field of labour economics, it has been debatable whether job security regulations decrease labour productivity or boost it. Likewise, though there is a substantial clarity in the theoretical literature as to how it can create rigidity and thereby in-optimality/inefficiency, the implications for labour productivity and employment are ambiguous. For example, Hopnhayan and Rogerson (1993) show that "firing-costs," imposed by EPL, discourage the desired level of "firings" required to attain optimality in the plant, in the face of economic downturn. And, during an economic upturn, owing to the possibility of having to lay off workers in the future and the costs thereof imposed by EPL, the hiring would be lesser than desired by employer if EPL were not in place. However, amidst EPL whether average employment would be negatively associated or positively with the costs that it (EPL) imposes, is ambiguous.   The empirical literature investigating impact of labour laws on labour productivity has grown rapidly in developing as well as in developed countries in this neo-liberal phase of the global economy. However, it presents a mixed picture (Betcherman, 2014). For example, while studies like Bassanini (2007); OECD (2007); Bassanini et al. (2009); and Cingano et al. (2010) find negative effect of EPL on labour productivity, several studies find positive effect (see Nickell,1999; Koeniger 2005; Belot et al. 2004). In Indian context, the discourse on JRR and its impact on labour productivity and employment have been growing faster. In the Indian context, Mitra and Ural (2006) find in their state-level panel analysis that JSRs have negatively affected labour productivity growth in firms.

The empirical studies that find evidence of negative impact of EPL on productivity are bereft of clear mechanism or explanation backing the findings. For example, giving due consideration to Roy (2004) which does not find notable evidence of rigidity effects of EPL, the question arises: then what explains the relatively lesser productivity (as found in the abovementioned studies) in states which amended its labour laws in pro-worker direction? Interestingly, at odds with the evidences of these studies are the findings in Pierre (2013) which shows that firms facing tight employment protection invest more in training and skill enhancement of permanent workers covered by labor laws. Since training has a positive effect on labour productivity, the finding of this study thus indicates that productivity is likely to be positively linked with EPL. Under this backdrop, the major questions that arise are: are the negative evidences in the empirical literature (using Leximetrics approach) on EPL and productivity spurious? How much should we trust them?

6.3. Empirical methodology

To estimate the impact of EPL on labour productivity, we estimate the following econometric model:

$$y_{ist} = \alpha_o + \alpha_1 PW/CW_{it} + \alpha_2 LI_{it} + \alpha_3 PW/CW_{it} * EPLI_s + \alpha_4 LI_{it} * EPLI_s +$$

$$\sum_{k \geq 2} + a_k \sum_{k \geq 3} a_k X_{kst} + \lambda_i + \gamma_s + \delta_t + \varepsilon_{ist}$$

Where y_{ist} is logged (employment or labor productivity) in industry (*i*), state (*s*) and year (*t*). Thus we are running a three-dimensional panel. *PW/CW* is ratio of directly employed workers (or permanent workers or secured workers) to contract workers, LI_{it} is dummy for labor-intensive industries. EPLI is index of EPL (see details in chapter 3, Table 3.1).

$\sum X_{kist}$ is a vector of industry-specific control variables and $\sum X_{kst}$ is a vector of state-specific control variables. λ_i, γ_s, and δ_t are industry-specific, state-specific and year-specific fixed effects, respectively, which help in taking care of the omitted variable bias of unobservable characteristics varying across industry, state, and time, respectively.

Like the total factor productivity (TFP) regression in the previous chapter, we include the relatively share of permanent workers (i.e. ratio of permanent worker to contractual worker = PW/CW) in the model to capture the impact of contractualisatoin on labour productivity. The dummy for labour intensive industries (LI_{it}) captures the impact of EPL on labour intensive industries. We are interested in that as the previous literature has emphasized on the impact of EPL on labour productivity in labour intensive industries. We make this dummy a time variant-variant one so as that it is compatible with fixed effect model because the Hausman test turns out in favour of the very econometric specification. The dummy for labor-intensive industries is constructed by applying the Median formula on the ratios of total labor force to total fixed capital for all industries for each year of our sample period. And those who fall above the Median are assigned the value 1, and zero otherwise. Though, mostly the dummies remain same over time, but there is a variation in some industries which technically makes our dummy for labour intensive industries a time-variant dummy. The average labor-intensity for selected 28 industries, between 1999-00 to 2007-08, is given in Figure 6.1.

We introduce the interaction between PW/CW and EPLI in the model because it enables us to find the impact of EPLI in industries using relatively higher share of permanent workers. In turn, it enables us to control for the productivity differential which may arise due to a substantial use of contractual employment. Besides, it also helps us to control for the amount of flexibility that employers may be enjoying due

to contractual employment. In order to capture the impact of EPLI in labour intensive industries, we interact EPLI with (LI_{it}). One of the benefits of the interaction of EPLI with other variables in the model is: since EPLI is a time-variant variable we could not include it separately in the model because of the presence of fixed effects. To overcome such problem, the same approach of introducing the EPLI in interaction form is also followed by Gupta et al (2007) and Sen et al (2013).The study deals with the potential autocorrelation and heterocedasticity problems by estimating robust standard errors clustered at the industry-by-state level (see Bertrand et al., 2004).

Like the analysis in the previous chapter, one of the main concerns in this analysis is that the share of permanent workers in total workers (PW/CW) is dependent upon several variables which could not be include in this regression and may simultaneously be correlated with the error term. In that case the share of permanent worker to contractual worker may be endogenous due to omitted variables bias explained in detail in the methodology chapter. Further, the average labour productivity of a firm may also affect the actual share of permanent worker to contractual, thus generating reverse causality in the model. Reverse causality would generate endogeneity problem and consequently, may render our results biased (misleading). To overcome these problems, we follow the same procedure that we followed in the previous analysis. We utilize instrumental variable (IV) technique to make the endogenous variable exogenous. We go by the evidence in Botero et al. (2004) that the fundamental ideology of a political party – left or right – has a bearing on labour regulations and bargaining power of trade unions. We exploit the share of electoral seats (of political parties in India) in state legislature as instruments for the endogenous PW/CW. The categorization of the Indian political parties on the basis of their fundamental ideology is done in line with Aghion et al (2008). Political parties are categorized into four groups: Bharatiya Janata Party – right of the centre party; Soft-Left Political

Parties[10], the Hard Left Political Parties, and Congress. Besides, we use ratio of number of strikes to number of lockouts as a fifth instruments. These instruments satisfy the exclusion restriction, as indicated by statistically insignificant p-value for against Sargan statistics (see in Table 6.2, Column I).

Figure 6.1: Average Labor-Intensity of industries (for the period 1999-00 to 2007-08).
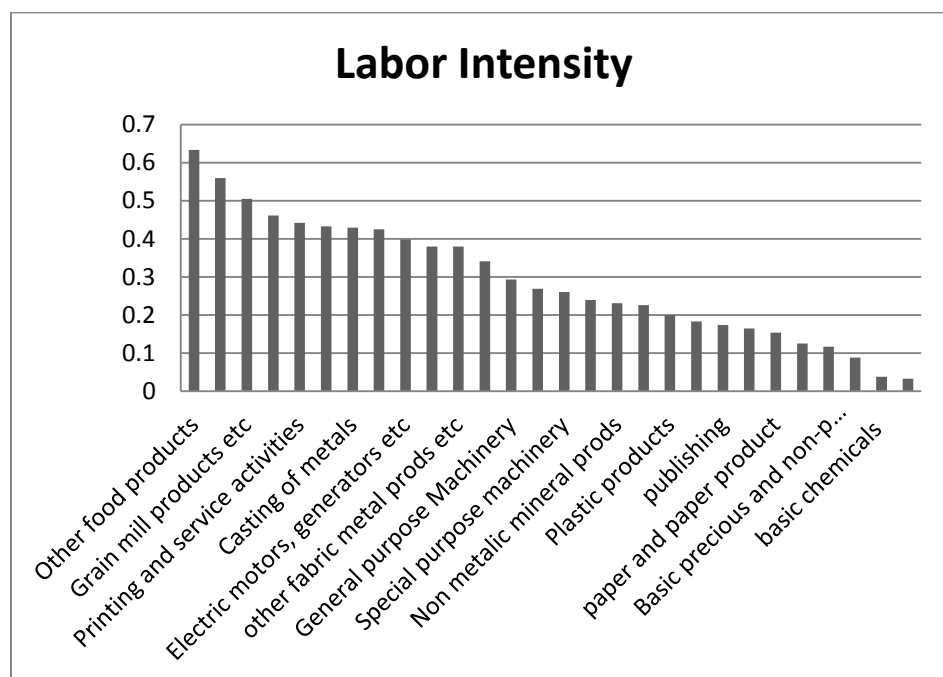
Source : authors calculation based on Annual Survey of Industries.

6.4. Empirical Results

6.4.1. Ordinary Least Square (OLS) Estimates

Initially, we derive the estimates under simple OLS estimation, without looking into endogeneity problem to see how the results shown up. The estimates are presented in Table 6.1. The results in column I, Table 6.1

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[10] (a) Congress = Indian national congress and Nationalist congress party (b) Hard left parties =Communist party of India and Communist party of India Marxist (c) Soft left= Socialist parties. The data on share of seats of these political party groups is taken from Election commission of India website.

show that increase in PW/CW has a positive impact on industrial labor productivity. The coefficient is positive and significant at 1% level of significance. It implies that contractualisation is detrimental for industrial labour productivity, whereas, the more the relative share of permanent (regular) worker is the better it is for raising the labour productivity. The reasons may be as follows: First, it turns up that employer tend to invest far more on skill-enhancement and training-programmes for regular workers as compared to contractual workers (Pierre, G., and Scarpetta, S., 2013). Second, hired through a formal recruitment process, the permanent workers – directly employed – are bound to be relatively skilled and qualified than their contractual counterparts, thus happen to be more productive. Third, since regular workers enjoy longer tenure, it makes the employee (or worker) to fetch and carry for the employer, which again enhances the labour productivity. Last but not least, regular workers are offered with better quality jobs, with several allowances that are withheld to contractual workers, it serves as a motivation for hard work and employee commitment, which, in turn, boosts the labour productivity. We controlled for technology of industry; state specific strikes and lockouts, proxy for state industrial relations, development expenditure, and road density. The coefficient on technology is positive and highly significant. On the other hand, the coefficient on strikes and lockouts is negative and significant at 1% level of significance; implying, as expected, that adverse industrial relations have a significantly negative impact on labor productivity.

In column II Table 6.1, we introduce the interaction of EPLI and PW/CW to find out the impact of rigidity on average labour productivity. The coefficient on the interaction is negative; however it is not statistically significant, indicating that EPL does not significantly affect labour productivity in industries operating in rigid states but using a relatively higher share of permanent workers.

In column III Table 6.1, we turn our focus to see the labour productivity in labor-intensive (LI) industries. The coefficient on LI is negative. However, it is not significant. Like previous regressions, the coefficient on technology is positive and highly significant, whereas, it is negative and highly significant on strikes and lockouts – a proxy for state of industrial relations.

Finally, in column IV Table 6.1, we interact the EPLI with LI. The coefficient on the interaction is insignificant. The coefficients on other included control variables are more or less the same as in earlier regressions.

6.4.2. Two Stage Least Square Estimates

We now present instrumental variables (IV) Second Stage Least Square (2SLS) estimates in Table 6.2. The ratio of PW/CW is now an instrumented variable. The results in Table 6.2 seem to be slightly different but statistical similar to the OLS estimates. The coefficient on PW/CW in Column 1 Table 6.2 is still positive and significant. In column II, where we introduced interaction of PW/CW and EPLI, the coefficient on the interaction is negative, though not significant as in earlier case.

Table 6.1: Impact of employment protection legislations (EPL) on Labor Productivity (total output/total number workers) by labour intensity of the industries – OLS results.

Variables	(I) OLS	(II) OLS	(III) OLS	(IV) OLS
Constant	0.791***	0.719***	0.701***	0.693***
	(0.217)	(0.218)	(0.217)	(0.217)
Log (P.W/C.W)	0.047***	----	0.047***	0.047***
	(0.016)	----	(0.016)	(0.016)
Log P.W/C.W * EPLI	----	-0.005	-----	----
	----	(0.010)	----	----
Time-variant Dummy (for labor intensive	----	----	-0.011	
Industries)	----	----	(0.012)	
Labor Intensive Ind. * EPLI	----	----	----	0.014
	----	----	----	(0.014)
State-Industry Specific Controls				
Log K/L (or Technology)	0.428***	0.434***	0.418***	0.424***
	(0.031)	(0.031)	(0.033)	(0.032)
State Specific Time-Variant Controls				
Log Strikes & Lockouts (lag1)	-0.010**	-0.011**	-0.010**	-0.010**
	(0.004)	(0.004)	(0.004)	(0.004)
Log Dev. Exp Per capita	0.032	0.042	0.031	0.032
	(0.037)	(0.037)	(0.037)	(0.037)
Log Road Density	0.055	0.050	0.056	0.055
	(0.058)	(0.058)	(0.057)	(0.058)
State-Industry Fixed Effects?	Yes	Yes	Yes	Yes
State Effects ?	Yes	Yes	Yes	Yes
Year Effects?	Yes	Yes	Yes	Yes
No of Obs.	2912	2912	2912	2912
Overall R^2	0.555	0.579	0.551	0.552

Note:(a) The dependent variable is log (Labor Productivity or output/workers), (b) Figures in parenthesis represents robust standard errors clustered at industry-by-state level, and

(c) *=p<0.10, **=p<0.05, ***=p<0.01

Table 6.2: Impact of EPL on labour productivity -- 2SLS results.

Variables	(I) 2SLS results	(II) 2SLS results
Constant	1.100***	1.346***
	(0.309)	(0.292)
Log Ratio of P.W/C.W	0.183**	0.195***
	(0.093)	(0.092)
Log P.W/C.W(estimated)*EPLI	----	-0.072
	----	(0.118)
Control variables	*K/L(lag1), Strike &lockouts (lag1), Dev. Exp., Road density(lag1),Power(lag2)*	*K/L(lag1),Strike & lockouts (lag1), Dev. Exp Road density(lag1), Power (lag2)*
Industry-by-state dummies?	Yes	Yes
State dummies	Yes	Yes
Year dummies?	Yes	Yes
No of Obs.	2296	2296
Overall R^2	0.903	0.913
Sargan test (p-value)	0.644	----

Note:- Figures in parenthesis represent robust standard errors clustered at industry-by-state level. However, in regression (I) we could not cluster the standard errors, because it was impossible to generate Sargan test score with clustered standard errors. And in regression (II) we could not generate Sargan test score because of interaction of the "instrumented P.W/CW" and EPLI. In this regard, since instruments were found to be valid in regression (I), so there is no point in doubting their validity in regression (II), which is almost the same except the interaction.

 *=p<0.10, **=p<0.05, ***=p<0.01

6.5. Impact of labour laws on employment

To analyze the impact of labour laws on employment, we run two regressions. In both regressions, we include industry-specific, state-specific, and year-specific fixed effects. We introduce EPLI in the form of interaction with the dummy for labour intensive industries. The results are presented in Table 6.3. The coefficient on labour intensive industry dummy (LI) is positive and significant at 1 % level of significance. In this regression, apart from controlling for some industry- specific time-variant control variables, we also control for per capita development expenditure, per capita net state domestic product, and power per capita million. The coefficient on development expenditure is positive and significant at 1 % level of significance, while it is positive, but not significant, on per capita net state domestic product (NSDP) as well as on power per capita million. Interestingly, the coefficient on the interaction (shown in column II Table 6.3) is negative and highly significant at 1% level of significance. This finding is surprising because the impact of labour laws on productivity is not found statistically significant. The coefficients on both industry-specific as well as state-specific controls remain almost the same.

Table 6.3: Impact of employment protection legislations on Employment of Workers.

Variables	(I)	(II)
Constant	1.294**	1.406***
	(0.599)	(0.635)
Time-variant Dummy (for Labor	0.118***	----
Intensive Industries)	(0.010)	----
Labor Intensive Ind. * LMR	----	-0.037***
	----	(0.018)
State-Industry Specific Controls		
Log Wage Cost	-0.300***	-0.326***
	(0.074)	(0.079)
Log Real Output	0.280***	0.315***
	(0.031)	(0.031)
Log capital	0.253***	0.173***
	(0.026)	(0.024)
State Specific Time-Variant Controls		
Log Dev. Exp Per capita	0.073**	0.078**
	(0.029)	(0.030)
Log Power Per capital Million	0.015	0.025
	(0.053)	(0.055)
Log Per capita NSDP	0.021	0.049
	(0.130)	(0.137)
State-Industry Fixed Effects?	Yes	Yes
State Effects ?	Yes	Yes
Year Effects?	Yes	Yes
No of Obs.	3276	3276
Overall R^2	0.809	0.765

Note:(a) The dependent variable is log (Employment of workers), (b) Figures in parenthesis represents robust standard errors clustered at industry-by-state level, and (c) *=p<0.10, **=p<0.05, ***=p<0.01

6.6. Conclusion

In this chapter, we investigated the impact of labour regulations on labour productivity and employment in Indian manufacturing sector. Besides, we also examine the impact of growing contractualisation on labour productivity. We use a quantitative index for employment protection legislation (EPL) reflecting the stringency of labour laws across the Indian states. The index is constructed by following the Gupta et al. (2007). We apply majority principle on Besley and Burgess (2004) index and OECD Index (OECD, 2007), besides using the Bhattacharjea's (2006) critique against the former to derive quantitatively the stringency of labour laws across states. Using three-dimensional panel data, we observe twenty-eight industries identically across thirteen states for the period of nine years, 1999-00 to 2007-08. To overcome the omitted variable bias we include fixed effects in the model, which take care of unobservable state-specific characteristics. We also include industry-specific as well as state-specific control variables in the model. The results show that employment protection legislation (EPL) does not affect labour productivity significantly. However, labour productivity is affected negatively with contractualisation. Our results show that labour productivity is significantly higher in industries using relatively higher share of regular workers. The estimates are robust to controlling for endogeneity in the model. The findings show that labour productivity is linked with state of industrial relations, for which we used a proxy in the form of man-days lost due to strikes and lockouts. The coefficient on the proxy is negative and significant. We also investigated the impact of EPL on employment. And interestingly, EPL is found to have statistically significant negative impact on employment.

In this chapter, employment effects of EPL apart, the productivity effects of labour laws and contractualisation are quite in line with those in the previous chapter. The findings do not support the theoretical literature underlying the debate on labour regulations. A relatively higher average labour productivity in industries using higher share of

permanent workers suggests that the overuse of contractual workers does not go down well with the employers. Although employers may be saving a significant amount of wage bills by using contractual workers at lower wages, the lower physical productivity among such workers seems to be outweighing the benefits of the same. Since EPL is not found to be having a negative impact on labour productivity, one can conclude that the main purpose of using the contractual employment is to reduce the bargaining power of workers so as to exploit them. Given these findings, any pro-employer labour reforms can have serious repercussions on the welfare of workers. Therefore, the ongoing debate on labour reforms must give due consideration to the already-abysmal state of the workers and the impact of informalisation, which seems to be likely to go up on abrogation of EPL, on the productivity and competitiveness of industries. The results suggest that firms should focus more on skill up-gradation and on-campus job training to boost productivity of workers. Firms should depend more on regular workers and offer incentives to workers in terms of higher wages and other fringe benefits to extract productivity benefits from them.

Chapter 7

Labour laws and informalisation of migrant workers

7.1. Introduction

The higher incidence of informalisation and the relatively lesser wages of contract workers discussed in the previous chapters do not leave any question mark over the claim that employers have circumvented the social security laws notwithstanding their minimal impact on industrial performance. Contractual workers, which constitutes around 35 per cent share in the total number of workers in Indian manufacturing sector, get only 70 percent of the wages of regular workers. Such types of findings indicate that the Indian state has failed to translate the huge body of labour laws existing in papers into a tangible social security for the workers. A substantial body of literature points out several causes and approaches such as contractualisation and weakening implementation of labour laws – resulting into ineffectiveness of the employment protection legislations (EPL). However, there is not a single study which looks into informalisation of migrant employment as a part of the debate on labour regulations.

In the past two decades, migration has increased notably in India to urban areas. In 1991, the number of migrants was 19.85 million which rose to 28.9 million in 2001. Economic factors, among others, are considered as the principal determinants of migration in India (Bhagat, 2010). While the migration of labour may lend mileage to the growth agenda set out by the Indian state, the exacerbating plight of migrant workers in the labour market has attracted the attention of the researchers over the recent years. As per NCEUS (2005), migrant workers are mostly found in informal sector, without any social security provisions.

Under this backdrop, this paper studies the link between labour laws and labour migration which is an ignored and unnoticed but seemingly

an important aspect of the aforementioned debate on labour laws and the pertaining routes to evading the job security regulations. This analysis is important because migration is turning out to be an important aspect of Indian labour market. The study would reveal whether labour laws are as effective as to serve the interests of the migrant workers working in the manufacturing sector. To the best of our knowledge, this is the first study in India or elsewhere of this kind. We utilize industry-by-state cross section data of NSSO 55th and 64th round survey on employment/unemployment and migration for 10 industries across 14 states of India. Besides, we also run a separate polled cross-section analysis based on aggregate state-level NSSO data (for the year 1999-00 and 2007-08) for 15 states. We use the EPL index that we used in previous chapters to capture the impact of labour laws on migration. The focus is mainly kept on formal manufacturing sector, which is at the heart of the ongoing debate on labour regulations. To control for the omitted variable bias, we include appropriate state-specific control variables. The results show that migration is positively linked to labour laws. Industries operating in states with relatively stringent labour laws, register higher usage of migrant labour. More interestingly, our results show that the industries operating in rigid states register higher employment of "casual migrant workers". The results imply that though the Indian state places in papers a plethora of labour laws, the workers especially migrants have not received any benefit owing to the abysmal state enforcement/implementation machinery.

7.2. Labour Migration in India: Previous literature and scenario

In the past two decades, migration to urban areas grew sharply in India and the factors determining migration are generally considered to be economic, such as job search (Hnatkovska et al., 2013; Bhagat, 2010; Srivastava, 2011; Dev and Evenson, 2003). The economic migrants have increased from 19.85 million in 1991 to 28.9 million in 2001, drawing attention from the researchers and policy makers towards

investigating the role and implications of migration in the contemporary labour markets. And more specifically, the researchers have been studying the fallout of the upward trajectory of migration on workers in general and migrant workers in particular. Migrant workers are mostly found in informal sector, without social security provision (NCEUS, 2005). While some studies (e.g. Duraisamy and Narsimhan, 1997) show that migrant worker is exploited in several ways such as by offering lower wages and extracting longer working hours, several other macro studies using NSS large sample surveys find that migrant workers are much better off in terms of income and consumption as compared to local workers (Hnatkovska et al., 2013; Kundu and Sarangi, 2007, Srivastava and Bhattachariya, 2003).

To evade the labour laws, employers have adopted several approaches and one of the easy approaches is the contractualisation discussed in Chapter 4. Since contractual workers do not fall under the ambit of employment protection legislations, employment of contract worker offers flexibility to employers especially in employment adjustment. However, though contractual employment is an easy option available for employers to evade the labor laws, there are several limitations to the use of contractual worker. First, it is allowed (under contract labour act 1970) only in non-core business activities of the firm. Second, there is an element of uncertainty associated with contractual worker, arising due to the abolition clause under contract labour act 1970 which empowers the government to abolish contractual employment system if and when required.

Under this backdrop, we investigate if there is any link between labour laws, particular job security legislations, and state wise inward migration. Theoretically, a worker may be attracted to the labor market where there is relatively higher social security, keeping other things constant. On the other hand, employer might prefer flexible labor (having no job security coverage) over the so-called rigid labor that enjoys social security under IDA or under Contract Labor Act 1970. Given the fact that there is a considerable variation in the existing body of pro-worker job-security regulations across various Indian states, it

can be argued that there is an incentive for both workers as well as employers to exploit the regulatory stringency of labour markets across states to maximize their gain. Workers may tend to migrate to states with pro-worker labour market, while the employers facing rigid labour market may find it helpful to usher in workers from other regions who may be easily employed on informal basis with no job security coverage. Thus, it is hypothesised that labour migration especially employment of informal migrant workers is positively connected with labour laws.

To explore the link between migration and labour laws, we begin with plotting the state-wise data on migration to see how it shows in the backdrop of state wise variation in labour market rigidity. As shown in the Figure 7.1 and 7.2, the share of inter-state migrant-workers to total labour force seems to be noticeably higher in most rigid and average states than that in the flexible states, suggesting that there is a direct link between pro-worker labour laws and migration. Although the pattern in Figure 7.1 and 7.2 does reflect a palpable link between labour laws and interstate migration, it is not clear yet whether this link is driven by employer or it is the pro-worker labour laws which are appealing to workers and thus attracting migration into rigid states. In the face of tougher rigid labour market in a given state, employers have a an incentive to substitute the local workers with migrant workers as long as the latter is willing to compromise on job security and work as informal labour without being covered by job security laws. To track down the perceivable link between labour laws and migration, we study the data on share of migrant casual workers to total number of casual worker in manufacturing sector. Interestingly, the Figure 7.3 offers a pattern showing that in average rigid or most rigid states, the share of migrant casual workers in total casual workers is higher than that in the flexible states. Given this kind of pattern, the question arises that why do the workers get attracted to rigid states with pro-worker labour laws, where they face higher incidence of casualisaton? The answer lies, as likely as not, in the fact that the positive association between labour laws and migration is driven actually by employers

who replace the local workers having relatively higher bargain power with the casual migrant workers and thereby evade the labour laws. To explore the link between labour migration and labour laws, we estimate state level pooled regression and Two-dimensional cross-section regression models in the following sections.

Figure 7.1: Share of interstate migrant workers to total labour force in 1999-00 and 2007-08.
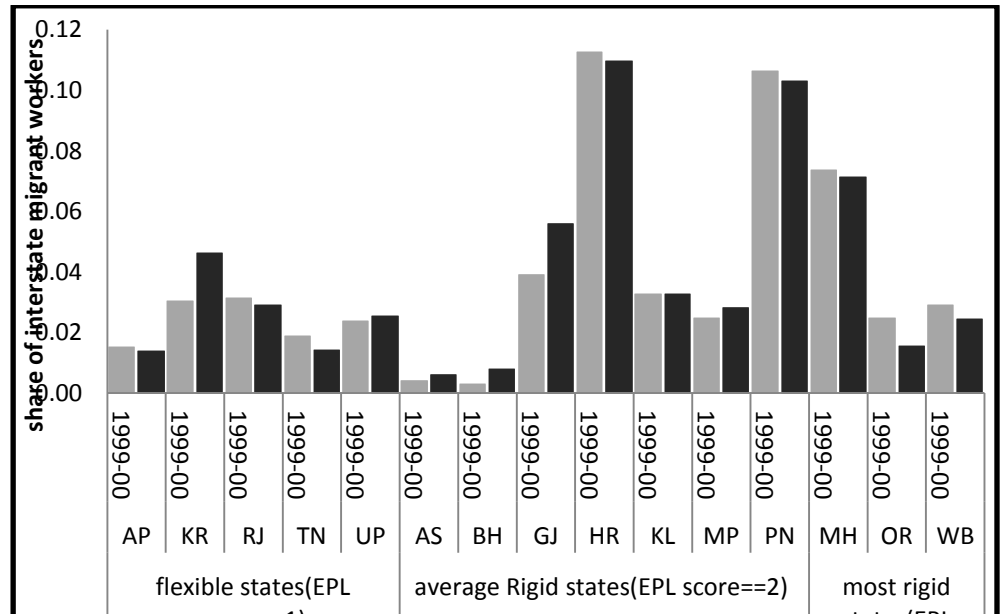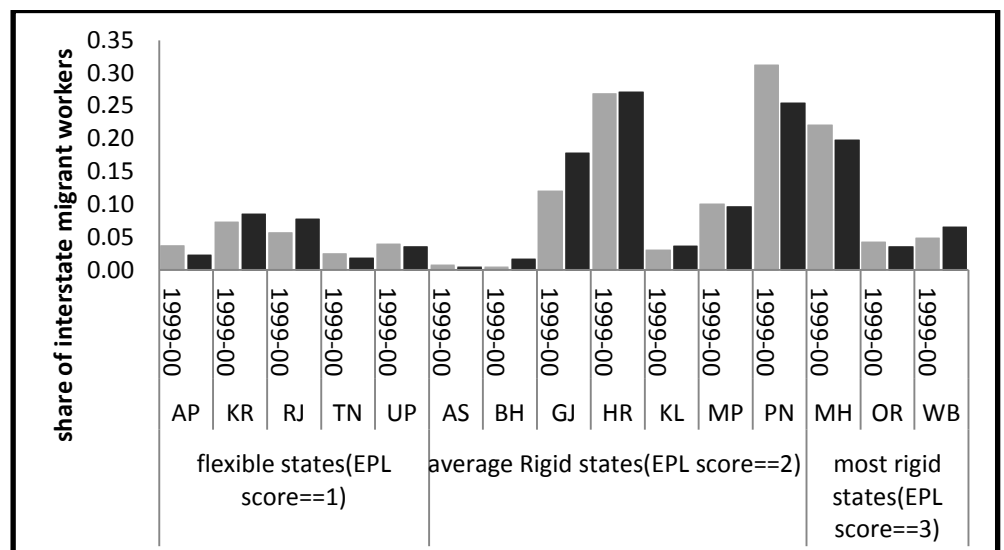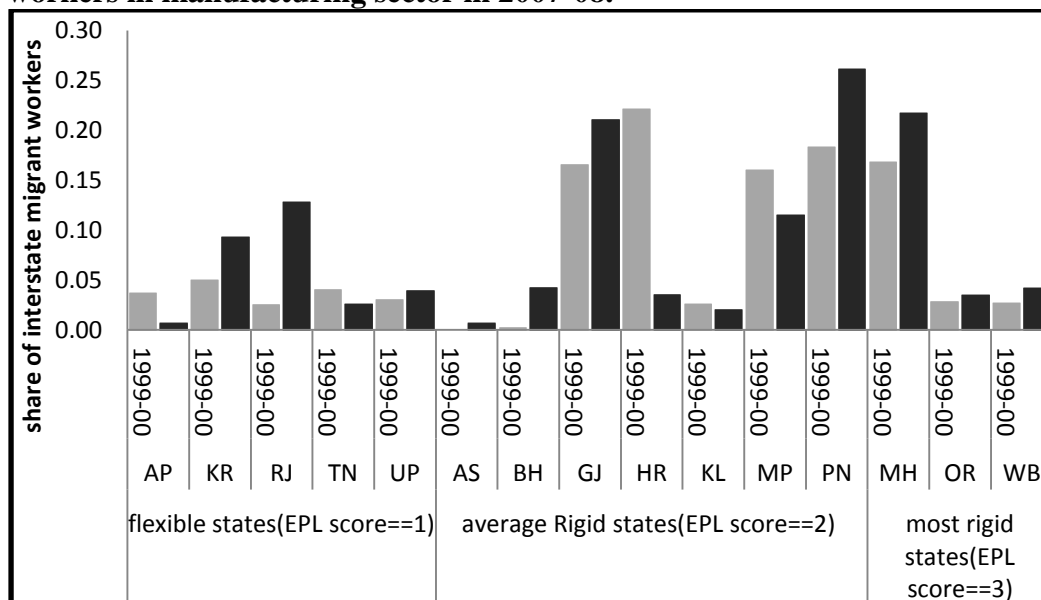

Figure 7.2: Share of interstate migrant workers to total workers in manufacturing sector in 1999-00 and 2007-08.

Source of data: National Sample Survey Organization (NSSO), 55th and 64th Round.

103

Figure 7.3: Share of migrant casual workers to total casual workers in manufacturing sector in 2007-08.

Source: Authors' Calculations based on NSSO data 55th and 64 Round.

7.3. Empirical Methodology

7.3.1. Simple Pooled Cross Section

To explore through econometrics the link between labour laws and labour migration, we use the EPL index that we have used in the previous chapters of this thesis, along with several relevant control variables. Before coming to the two-dimensional (industry-by-state) cross-section analysis for the formal Indian manufacturing sector, let us first start with a simple pooled cross-section dataset for the overall manufacturing across 15 major states of India[11]. We use 55th and 64th survey round on employment/unemployment and migration of National Sample Survey Organization (NSSO). The basic empirical specification that we utilize is as follows:

$$Y_i = \alpha_0 + \beta_1(EPLI)_i + \beta_k X_{ki} + \varepsilon_i,$$

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[11] Because the EPL index is available for only 15 states of India, we could not extend our sample size to other states. And, we use pooled cross section, because it gives precise estimates, as the sample size increases (Wooldridge, 2003).

We run two regressions. In the first regression, $\mathcal{Y}_i$ is the share of interstate migrant workers in total number of workers in manufacturing sector of ith state. This kind of regression enables us to see if there is any link between interstate migration and labour laws. Then, we run second regression in which our dependent variable ($\mathcal{Y}_i$) is share of interstate casual migrant workers in total casual workers in manufacturing sector. This regression enables us to explore whether the link between labour laws and interstate migration is driven by employers or by workers. The EPLI in the equation is the index reflecting the state-wise stringency of pro-worker labour laws. It varies from '-1' to '1'. X_{ki} represents the set of state specific control variables which includes Male unemployment rate; Gross State Domes Product (GSDP) deflator; Share of urban population; relative participation of male and female; Share of employment in manufacturing and construction sector in total employment; per capita development expenditure; road length density and Human Development Index. Share of employment in manufacturing and construction sector in total employment controls for state specific manufacturing base; it is important to be controlled for as the labour laws in question are especially applicable to manufacturing sector. Road length density and per capita development expenditure controls for state specific infrastructure availability. Similarly, the state level male unemployment rate controls for the overall demand for labour, while the GSDP deflator controls for state specific inflation – since Consumer price index (CPI) is not available at the state level, GSDP deflator is the best option. To control for state specific standard of living, we include state specific Human Development Index which is a composite index of life expectancy, education and per capita income. Finally, share of urban population is important as it controls for urbanization which is important in the context of migration. Similarly, relative labour force participation of males and females may have bearing with labour market dynamics; therefore, we control for it. We also include year dummy to control aggregate changes in population

distributions over time. We define 'interstate migrants' as per the usual place of last residence (UPLR) definition. Interstate migrants are defined as those whose last place of residence was different state than the current place of residence. The percentage of population categorized as interstate migrants was 2.74 percent and 3.3 percent in 1999-00 and 2007-08 respectively; and the percentage of interstate migrants to that of total labour force was 3.28 percent and 3.91 percent in 1999-00 and 2007-08 respectively.

7.4. Empirical Results

Pooled cross-section regression-based estimates show a direct impact of labour laws on interstate migration. In Table 7.1, column 2, we present the estimates without controls variables. As shown, the coefficient on EPL index (EPLI) is positive and significant, indicating that migration is higher in states having rigid labour laws. In column 3, we include control variables and yet the coefficient on EPLI is does not change. The coefficients on most of the control variables have expected signs. The coefficient on Human Development Index and road length density per square kilometre is positive and significant as expected. The coefficient on male unemployment rate is negative and significant, suggesting that the increase in local unemployment discourages inward migration. Similarly, the coefficient on share of urban population and share of manufacturing and construction workers have a positive sign on coefficient which was expected, but these are insignificant. However, the coefficients on per capita development expenditure, GSDP deflator and relative participation rate of female-male are insignificant.

Although the positive and significant coefficient on EPLI does signify a direct effect of labour laws on interstate migration, it does not tell us whether this link is linked with the fact that employers prefer local workers over migrant workers, or it is because workers in states with less-pro-worker labour market are attracted to rigid states. Therefore, to unravel the genesis of the link between labour laws and migration,

we run second regression, linking EPL with share of migrant casual workers in total number of workers in state manufacturing sector. The estimates are presented in column 4 and 5 of Table 7.1. The coefficient on EPLI is again positive and significant. This finding is interesting because it tells us that if migrant workers are really attracted to rigidity pro-worker labour law states, then their casualisation must not be relatively higher in such states. Thus, it can be concluded that the significant positive coefficient on EPLI in our second regression indicates that it is basically the employer who ushers in higher employment of migrant workers on casual basis falling outside the purview of job security regulations. The coefficients on control variables in column 4 and 5 are in line with those in column 2 and 3.

7.5. Two-dimensional cross section analysis for formal manufacturing sector.

The major drawback in the above analysis is that, it does not distinguish between formal and informal sector in the Indian manufacturing. Informal sector, in which labour laws especially job security regulations do not apply, constitutes a major portion of the small manufacturing sector that India has. Using NCEUS (2009) definition, which is first adopted in 55th NSSO employment-unemployment round 1999-00 – the only NSSO round providing information on migrant workers in formal and informal manufacturing sector, we generate a two dimensional data set for 10 industrial sectors in formal sector alone across 14 states of India[12]. More importantly, in the above analysis, since we use state level aggregated data for the year 1999-00 and 2007-08, the number of observations was lesser. Three dimensional cross-sections (i.e., industry-by-state data) enable us to achieve disaggregation and increase the number of observations. Under this approach, we have total 140 observations (10x14=140). This kind of econometric specification has been used extensively in the empirical

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[12] In two-dimensional data set for 10 industrial sectors was possible only for 14 states of India. Such data set is not available in Assam on the 10 industries matching with those in the rest of the states. Therefore, we exclude that state from the sample in this analysis.

literature on labour laws and industrial performance especially in the Indian context (see e.g., Besley and Burgess, 2004; Gupta et al., 2007; Ural and Mitra, 2008; Aghion et al, 2009; Dougherty, 2013; Sapkal, 2014 etc). In this way, we study the behaviour of employers (in respect to employment of migrant workers) of 10 industries across 14 Indian states with varying degrees of labour laws. This serves as better robustness check for the findings discussed above. Two-dimensional cross section model is specified as follows:

$$\mathcal{Y}_{is} = \alpha_0 + \beta_1(EPLI)_s + \beta_k X_{ks} + \varepsilon_{is}, \qquad i=1........,10,\ s=1.........,14$$

Where, $\mathcal{Y}_{is}$ is share of interstate migrant workers in formal industrial sector 'i' and state's'. X_{ki} represents the set of state-specific control variables. EPLI is the index of EPL (see details in chapter 3, Table 3.1). The results are presented in Table 7.2. In column 2, we run regression without control variables. The coefficient on EPLI is positive and significant at 5 % level of significance. In column 3, we include the control variables as well. The coefficient is still positive and highly significant. These results are in line with the earlier results in simple pooled cross section model. The coefficients on control variables such as Human Development Index, male unemployment rate and road length density are significant and in line with our expectations. The coefficients on ratio of female to male labour force participation rate indicate that the increasing relative labour force participation of females discourage inward migration, may be because the employer finds cheap labour in women who may be easily engaged in informal sector without job security. The positive and significant coefficient on GSDP deflator indicates that migrant workers are attracted to nominal increase in wages consequent upon increase in general prices. The coefficients on share of urban population and share of manufacturing and construction sector workers in total workers are insignificant. Slightly surprisingly, the coefficient on per capita development expenditure turns out to be negative in this regression.

Table 7.1: Interstate migration and labour laws – Pooled cross section regression estimates.

Explanatory Variables	Dependent Variables			
	Share of interstate migrant workers in total workers in manufacturing sector		Share of interstate casual migrant workers in total casual workers in manufacturing sector	
	Without Controls	With Controls	Without Controls	With Controls
Constant	0.016 (0.023)	-0.455 (0.332)	0.025 (0.026)	-0.455 (0.332)
EPLI	0.037** (0.016)	0.047** (0.017)	0.029* (0.017)	0.047** (0.017)
Year dummy#	----	-0.182 (0.127)	----	-0.182 (0.127)
Human development index	----	0.501** (0.209)	----	0.501** (0.209)
Share of urban population	----	0.037 (0.336)	----	0.037 (0.336)
Ratio of female to male labour force participation rate	----	-0.135 (0.111)	----	-0.135 (0.111)
Share of manufacturing and construction sector workers to total workers	----	0.217 (0.197)	----	0.109 (0.202)
State level Male unemployment rate	----	-0.037** (0.013)	----	-0.037** (0.013)
GSDP Deflator	----	0.004 (0.003)	----	0.004 (0.003)
Per capita development expenditure	----	-0.000 (0.000)	----	-0.000 (0.000)
Road length per 100sqr km's	----	0.005** (0.003)	----	0.005** (0.003)
Observations	30	30	30	30
R-squared	0.121	0.673	0.089	0.673
F-statistic	5.434	8.950	2.946	8.950

Note: (a) Figures in Parentheses represent robust standard errors
 (b) *** $p<0.01$, ** $p<0.05$, * $p<0.1$(c) #year 1999-00 is the
reference category (d) Per capita development expenditure is taken
 for the year from 1995 to 2000 and 2005 to 2010 for two respective
 time periods (e) The data for development indices is taken from India stat
data repository available at http://www.indiastat.com/default.aspx
 (f) Employment status is defined as per Usual Principal Subsidiary
 Status (UPSS). Data on other controls variables is taken from CMIE.

Table 7.2: Interstate migration and labour laws – Two dimensional cross-section regression estimates.

Explanatory Variables	Dependent Variable: Share of interstate migrant informal workers in formal manufacturing sector	
	Without Controls	**With Controls**
Constant	0.013 (0.019)	-2.612** (1.271)
EPLI	0.027** (0.013)	0.100*** (0.029)
Human development index	----	0.885* (0.522)
Share of urban population	----	-0.224 (0.259)
Ratio of female to male Labour force participation rate	----	0.267* (0.137)
Share of manufacturing and construction sector workers to total workers	----	0.190 (0.296)
State level Male unemployment rate	----	-5.732** (2.293)
GSDP Deflator	----	0.025** (0.012)
Per capita development expenditure	----	-0.000** (0.000)
Road length per 100sqr km's	----	0.009** (0.005)
Observations	140	140
R-squared	0.028	0.198
F-statistic	4.476	5.276

Note: (a) Figures in parentheses represent robust standard errors (b) *** $p<0.01$, ** $p<0.05$, * $p<0.1$ (c) the data for development indices is taken from Indiastat data repository available at http://www.indiastat.com/default.aspx (d) per capita development expenditure is taken for the year from 1995 to 2000 (e) Employment status is defined as per Usual Principal Subsidiary Status (UPSS) (f) Data on other controls variables is taken from CMIE.

7.6. Conclusion

In developing countries like India, though there is a plethora of pro-worker labour laws in papers seeking to safeguard the workers from unfair exploitation and ensure job security, the woes of the workers have only been exacerbating owing to (purportedly) weak implementation of the laws. Yet, to avoid having to deal with such pro-worker state interventionist institutions, there is always a tendency that employers explore ways to be elusive to what they claim to be creating rigidity in business, and breeding inefficiencies − employment protection legislations. One of the ways adopted by the employers to circumvent the laws is to employ contract labour, a flexible labour input as it does not fall under the purview of the EPL. However, the contract labour is allowed by Contract Labour Act 1970 only in non-core activities, with the act even authorizing the government to abolish the provision of contract labour system any time if and when required. In this context, we establish a link between labour laws and employment of migrant worker on casual (informal) basis. Since the central government as well as state governments in India are competent to legislate over the "labour', there prevails a considerable variation in terms of stringency of pro-worker labour laws across states. By capturing the state level variation in labour laws quantitatively using leximetrics approach, we investigate if the inward migration is linked with the pro-worker labour laws. Using pooled cross-section regression analysis, we find a direct link between pro-worker labour laws and informal employment of migrant workers. We find that share of migrant casual worker is relatively higher in states having relatively pro-worker labour markets, suggesting that employers employ migrant workers on informal basis to ward of the employment protection legislations. We check the robustness of our results by carrying out a further disaggregated analysis, using industry-by-state data (two dimensional cross sectional data). The results are robust.

These findings suggest that, with rising tide of globalization making it tougher for the business to maintain the grip in the market, the

employers' appetite for gaining the competitiveness through flexibilisation or informalisation of workforce is only likely to increase. And given the overt exploitation and insecurity among the informal workers especially in the Indian context, it becomes mandatory for the policy makers to come up with a suitable policy response, so that the workers do not suffer the brunt of increasing avarice of the employers. There is a need to overhaul the implementation (machinery) of labour laws and extend the job security regulations to bring migrant workers into its ambit.

Chapter 8

Summary and Policy Implications

8.1. Summary

The main objective of the various studies in this thesis was to investigate the impact of labour laws on industrial business theoretically as well as empirically. Besides, in the midst of ongoing "flexibility debate" which seems to be in favour of doing away with job security regulations, we studied whether the Indian state succeeded in implementing the labour laws effectively to protect the welfare of the workers. The theoretical literature that underlies this whole study postulates that pro-worker employment protection legislations (EPL) have the potential of creating rigidity in employment adjustment which, as per the literature, may lead to in-optimality and hence may impinge on productivity. Consequently, it may discourage employment and investment in the firms facing such labour laws. There is no one denying the fact that the empirical investigation of the economic effects of labour laws is always susceptible to multiplicity of limitations arising due to the complexity in interpreting and quantifying the labour laws to capture their economic impact, using econometrics. Such kind of empirical studies pose a major challenge for researchers especially in developing countries like India, where there may exist a bulk of labour laws in papers but their implementation may be all but ineffective. However, since the debates on labour laws have taken centre stage in this neoliberal phase of the global economy, researchers are inspired to venture into using the latest techniques in statistics and econometrics as an attempt to capture the impact of labour laws on several aspects of the industrial business. Although there is a substantial body of empirical literature that studies the impact of labour regulations on industrial business, there is a lack of consensus among researchers, with empirical evidences (from across the world) offering a mixed picture. Hence, this study was an attempt to: track down the sources of inconclusiveness and ambiguities

in the theoretical as well as empirical literature underlying the debate on labour market regulations in India as well as elsewhere. A better and a typical direct approach to testing the validity of the theoretical literature on employment protection legislations (EPL) would be to examine if it creates rigidity in labour market. However, owing to the non-availability of the sufficient data on required variables, we approached the investigation in indirect way as has been done by the existing literature in Indian context or internationally. The fundamental premise held entirely in this thesis was that if there is a genuine substantive impact of EPL, then there must be consequences as well. More specifically, speaking in the context of labour laws, if there is a notable rigidity effect of EPL, then as per the theoretical literature, there must be relatively lesser productivity and employment generation in industries facing tougher EPL – keeping other things constant. Hence, in this thesis, instead of directly studying the rigidity effect of EPL, we study the productivity and employment effects of the same. Essentially, the main purpose of this study was to investigate the impact of EPL in a dualistic labour market that is featured by co-existence of informal workers and formal workers. While the formal workers may include those workers who do not fall under the purview of EPL (such as contract workers; casual workers etc), formal workers are those who enjoy job security laws. This study is based on the Indian manufacturing sector. With a plethora of labour laws in papers (OECD, 2007) and the upward trajectory of informalisation cutting across alarming levels, the Indian manufacturing sector serves as a perfect case of dualistic labour market. The debate on labour regulations has taken centre stage in India over the recent years especially since Narender Modi Led Bharatiya Janata Party came into power at the centre. The current Indian state echoes that labour market in India is too rigid, and stresses the need for pro-employer amendments in the existing labour laws to put the industrial growth at higher trajectory. Employers, who are up against employment protection legislations, claim that due to rising market volatility in this phase of the globalization, they need more flexibility in business to

114

compete in the international markets. Given the fact that contractualisation exists even in the formal manufacturing sector substantially; we were interested to see if job security regulations casted any shadow over the performance of industrial business in this expansionary phase of the Indian economy. We also attempted to investigate if there is any link between labour laws and the growing informalisation in the Indian manufacturing sector. And more importantly, we also investigated the impact of contractualisation on industrial productivity.

In India, as the subject "labour" is incorporated in the concurrent list of the constitution, the article 246 of the constitution authorizes both the central as well as state governments to legislate over the very subject. Therefore, there exists a notable variation in EPL across various states of India. To capture the impact of EPL on industries, we exploit the state level variation in these laws. To use the state-level variation in empirical econometrics model, we construct an index (by following Gupta et al., 2009) called employment protection legislation index (EPLI) showing the stringency of pro-worker labour laws across states. The index is constructed by drawing upon the information available in three different studies in the literature based on Indian context – Besley and Burgess (2004), Battacharjea (2006), and OECD (2007).

In this study, as we hypothesized negative impact of contractualisation (or informalisation) on productivity in industries, we thereby raised a crucial empirical issue that has been ignored in the existing literature; it is the so-called productivity differential between regular workers and contractual workers. Our study goes on further to explaining that in empirical estimation of the impact of EPL on productivity in industries across various states with varying levels of contractual employment, if the productivity differential is not controlled for, the credibility of the results may be questionable. Unlike earlier literature, with the help of interaction effects, we managed to control for productivity differential as well as the amount of flexibility that employers enjoy by using the contractual employment. Our study, like most of the existing literature

based on Indian context, utilizes three-dimensional panel data. We have two cross section dimensions – industry and states – and time dimension. This kind of data set enables us to carry out the analysis with more disaggregated information than it would be possible with a mere state level panel data. Most of our regressions are estimated using fixed effect strategy as the test for choice between random effect and fixed effect model turns out to be in favour of the latter model. The use of fixed effect strategy is also underscored by the fact that our analysis involves various industries and various states, with each state differing significantly with the rest in some inherent characteristics and policy orientation. In empirical estimation, we capture the impact of EPL by interacting EPLI index, which is time-invariant, with the appropriate time-variant variables.

We also raise endogeneity concerns in our empirical model with sufficient theoretical support. To overcome the endogeneity problem, we follow instrumental variable two stage least square (IV 2SLS). For appropriate instruments, we use data on share of electoral seats occupied by various political party groups. Labour productivity is measured by Real output per worker, and total factor productivity (TFP) is calculated by using Data Envelopment Analysis (DEA). In order to avoid the attribution bias, we use a set of appropriate state-specific as well industry-specific control variables apart from including the fixed effects in most of our regressions.

8.2. Overview of the Findings and their Implications

We begin our empirical analysis with investigating the link between labour laws and contractualisation. Our results show that the incidence of informal employment is directly related with EPL and volatility. Besides, the results also show that with the increase in labour bargaining power, employer tends to substitute informal labour for the formal labour. The results are robust to endogeneity correction. Then, we examine the effect of labour laws on total factor productivity. Our results indicate that EPL does not affect TFP. We do not find significant impact of EPL even in highly volatile industries in which

the need of flexibility is relatively higher. Likewise, our study finds that that the impact of employment protection legislation is negative on labour productivity. However, the impact is insignificant as suggested by the insignificant (though negative) coefficient on EPL index in labour productivity regression. Interestingly, we found negative impact of contractualisation on productivity. The impact of labour laws was found negative and significant on employment which is a striking finding, given the evidence of insignificant productivity effects of EPL.

Let us discuss the implications of the findings in this study on the theoretical literature underlying the debate on labour regulations, and then derive the policy implications. This study, shows that informal employment exists substantially in the contemporary labour markets and it especially exists alarmingly even in the formal Indian manufacturing sector. In this study we found a positive association between EPL and informalisation, with the latter being a dependent variable. Likewise, we found that there is a positive association between informal migrant workers and labour laws. What do these findings suggest? Do they suggest that EPL creates rigidity? Technically, it means that as the stringency of EPL increases, employers substitute formal worker with the informal. Looking more closely, since the analysis was based on industry-by-state panel data, it would mean that the industries operating in relatively rigid labour markets prefer contractual labour over the regular employment as the latter requires to be offered with job security. Again, let us break down this finding and see what it implies as this can be seen as a pivot to the entire debate on labour laws. It can be interpreted in two ways. One, that the employers feel the need for greater numerical flexibility in employment adjustment than they currently enjoy in the midst of job security regulations covering regular workers; therefore, the firms contractualise the workforce to gain flexibility. Second argument pertaining to this could be that the employers facing tight pro-worker labour laws contractualise the workforce so as to reduce the bargaining power of workers and labour unions to exploit the labour in various

ways. To pick up between these arguments, let us utilize a few more findings that we unfolded in this study. Ideally, since contract worker is a flexible labour as it does not fall under the purview of job security laws, there must be a premium on contractual employment when there is a desperate need of additional flexibility in hiring and firing. So, one would expect that the wages for flexible labour (contract workers) be higher than the rigid labour (regular workers enjoying job security). However, on the contrary, as per the ASI (Annual Survey of Industries) data, contractual workers' average daily earnings are 30 % lesser than that of the regular workers. Besides, the working conditions and the standard of employment for the contract workers are relatively abysmal. Thus, in the light of these findings, it can be argued that employers do increasingly usher in informal labour to mainly reduce the bargaining power of workers and labour unions. However, flexibilizaton motive cannot be utterly ruled out whatsoever. Thus, rather than attributing the informalisation to labour laws and then arguing for the abrogation of job security, a rational and logical policy response would be to regulate the contractual employment and ensure that their working conditions and wages are raised at par with those of the regular workers. Interestingly, we found in this study that there is negative impact of contractualisation on both labour productivity and total factor productivity. Therefore, though contractualisation may help employers in saving wages bills; however, the net effect of contractualisation seems to be negative on industrial productivity, as our results shows that productivity is relatively higher in industries using relatively higher share of regular workers. One can say that there is a tradeoff between the flexibility that employers gain out of contractual employment and the inefficiencies resulting from the same. In other words, higher contractual employment may provide greater flexibility to employers, but at the same time it may lead to inefficiency as such type of labour input is inferior.

Now let us turn to the implications that can be derived from the findings pertaining to productivity effects of labour laws in this study.

The insignificant effect of EPL on total factor productivity (TFP) and labour productivity that is found in this study implies that there is a substantial flexibility in the Indian labour market due to contractualisation. Besides, there may be a plethora of labour laws in papers, but they are ineffective owing to the abysmal implementation. Moreover, as discussed in the previous chapters that as per Contract Labour Act, 1970, contract employment can be used in non-core activities, while core constitutes the essential activities of the enterprise where the need of frequent employment adjustments rarely arises. Therefore, in principle, the demands for flexibility must be limited to well defined, non-core activities only and those activities that are highly affected by the short-run ups and downs in the market.

Thus, the insignificant productivity effects of EPL do not support the theoretical predictions of the literature underlying the debate on labour laws. Theoretical literature in labour economics explains that EPL can create rigidity in business and thereby bring in inefficiencies in production. The insignificant productivity effects of EPL found in this study suggest that the pro-worker labour laws do not create so much rigidity in business so that the productivity may be harmed. The theoretical literature on EPL discussed in this thesis ignores the co-existence of formal and informal labour force. While explaining the impact of firing restrictions on industrial performance, the literature implicitly assumes that the entire workforce comes under the regulation of hiring and firing and thus predicts tangible negative effects on employment adjustment. However, as shown in this study, there is a growing trend in informal employment; and dualism has been cutting across most of the labour markets in developing as well as developed countries. Therefore, the relevance of the theoretical literature underlying the debate on labour laws is shrinking over time. The theories need to be reformulated to explain the economic effects of firing restrictions (or labour laws) in the context of dualistic labour market.

The findings of this study have several policy implications for the Indian State. There is no doubt that the number of labour laws governing the manufacturing sector in India is unnecessarily large. Therefore, there certainly is the need for rationalization of labour laws to bring them to their optimal size. The contemporary commodity markets have become rather volatile due to the increasing dependence of world economies among each other in this rapidly globalizing world. Therefore, no one can dispute the fact that the need for flexibility in the business has increased. Therefore, to provide the employers the adequate flexibility that they need, there must be proper assessment and identification of the business activities that are genuinely being hampered by the rigidity caused by employment protection legislation. In this regard, the non-core (ancillary activities like catering, cleaning, security etc) and non-perennial (like seasonal or fixed during work) activities of the enterprises must be unequivocally delineated and left free for using non-regular worker. Similarly, those business activities which are more vulnerable to market shocks must be clearly defined and should not be brought under the purview of job security regulations.

However, the main focus of the ongoing debate on labour regulations ought to be on how to rein in the rapidly growing informalisation which is cutting across all of the manufacturing industries irrespective of whether operating in formal or informal sector. There must be strict regulations for contractual employment and the enforcement machinery of the existing regulations needs to be overhauled to improve the effectiveness and implementation of the system.

8.3. Limitations and scope for future research

The limitations of this study are as under:

- This study seeks to examine the impact of labour laws, with the assumption that the rigidity effects of EPL (if exists any) would be apparent in terms of lesser productivity and employment in industries operating in states with rigid labour laws. In this

regard, the limitation arises from the fact that the theoretical models, underlying this study, are basically underpinning the rigidity effects of EPL on hiring and firing decisions. Though it is technically correct to link the EPL with productivity and employment effects, it would be better however to measure the rigidity effects of EPL directly in the first place. A negative association between EPL and productivity or employment is attributed to the "inflexibility" created by EPL. But whether EPL creates inflexibility in hiring and firing decisions of employers deserves investigation. Due to the lack of sufficient data on required variables, our analysis could not unearth directly whether EPL creates inflexibility or not in the first place.

- This study is basically carried out using industry level data for various states. In this regard, firm level data would be much better as it is difficult to control for the vertical and horizontal disintegration of firms when the analysis is based on industry data.

- In this study, we link the contractualisation in the manufacturing sector with EPL. In that analysis, we control for several factors that are related informalisation, but most of these are domestic related factors, while there could be several other factors related with international trade that may be connected with contractualisation. It would be better to take such factor in to account.

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