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**Working Paper**

## Creating Jobs in India's Organised Manufacturing Sector

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# **Working Paper 286**

## **Creating Jobs in India's Organised Manufacturing Sector**

**Radhicka Kapoor**

**September 2014**



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## Abstract

Despite witnessing a decade of rapid economic growth, an acceleration of growth in the organised manufacturing sector has eluded India. Using data from the Annual Survey of Industries, we examine the factors holding back the growth of output and employment in this sector. We find that there are heterogeneities in the performance of the manufacturing sector across industries and states. Recent economic growth has benefited industries which rely more on capital and skilled workers as opposed to unskilled/low skilled workers. This fact combined with the rising capital intensity of production over the decade partly explains the limited contribution of the manufacturing sector to employment generation. At the state level, we find that states with more inflexible labour regulations have witnessed slower growth in employment and output in manufacturing than states with more flexible labour market regulations. However, it would be incorrect to put the entire onus of the dismal performance of the manufacturing sector on labour regulations as firms are responding to rigidities in the labour market in innovative ways such as the greater use of contract workers. Factors such as cumbersome product market regulations and infrastructural bottlenecks have also adversely affected the growth of the manufacturing sector. Given that the days of industrial licensing are gone and markets are influenced not only by regulations enacted by central government, but also those enacted by state governments, much of the action for improving the business environment needs to be taken at the state level.

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# Creating Jobs in India's Organised Manufacturing Sector<sup>1</sup>

Radhicka Kapoor

## 1. Introduction

India has the largest young population in the world, with over 60% of the population in the working age of 15-59 years. A quarter of the projected increase in global working age population between 2010 and 2040 is expected to occur in India, reflecting the addition of 300 million working age adults<sup>2</sup>. A large workforce, however, translates into more workers only if there are jobs for it. If India has to seize this opportunity and exploit its demographic dividend, it needs to increase employment for its workforce at a much more rapid rate than ever before.

The disconnect between GDP and employment growth and a shift straight from agriculture to services led growth, leapfrogging manufacturing have been the two idiosyncratic features of India's structural transformation. This is reflected in the overwhelming contribution of the services sector to GDP growth (63%) over the last decade but a significantly smaller share in employment (about 25%) during the same period. India's pattern of growth has neither been characterized by a change in the structure of employment towards manufacturing nor by an increase in the share of this sector in total output. The manufacturing sector, which currently accounts for just 12.6% of India's labour force, has greater capability of generating more jobs per unit of output than the services sector. The creation of a large number of industrial jobs made possible by the rapid growth of manufacturing sector will significantly enhance the prospects of India's low skilled and unskilled workforce getting suitable jobs.

However, creating large number of jobs in the manufacturing sector in the face of the intensifying demographic pressures is inadequate. These jobs need to be 'productive jobs'. India's manufacturing sector is characterized by its dualistic structure i.e. the prevalence of a formal/organized sector which coexists with a large "unorganized sector". The formal sector is statistically defined by the Factories Act which covers all factories employing 10 or more workers using power, or 20 or more workers without using power. The unorganized sector is divided into three sub-categories- Own-account manufacturing enterprises (OAME) which are household enterprises making use only of family labor; Non-directory manufacturing establishments (NDME) and Directory manufacturing establishments (DME)<sup>3</sup>. The unorganized sector, in particular the household sector, accounts for a disproportionately large share of employment, but a very small share of value added in manufacturing. The dominance of this sector as well as its low productivity is evident in Table 1. Dualism has

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<sup>2</sup> United Nations, 2009

<sup>3</sup> NDMEs employ at least one wage (hired) worker and have between 2-5 workers in total. DMEs employ between 6-9 workers in total of which at least one would be a hired worker.

persisted in the manufacturing sector for the past two decades and this situation is unlikely to change drastically over the next decade, with over four-fifths of new jobs created in manufacturing expected to be in the unorganized sector (Goldar, 2013). This is a cause for concern. Firms in the organized sector pay higher wages, are more productive and provide better working conditions, security of tenure, non-wage benefits and social security than firms in the informal sector. It is this sector which has the necessary characteristics to create productive employment. Given the pressing need for productive employment creation in a country like India, this paper focuses its analysis on the formal sector.

**Table 1: Employment and value added in manufacturing by type of establishment (2010)**

	OAME	NDME and DME	Organised
Distribution of employment (%)	57.83	31.65	10.52
Mean workers employed	1.43	4.31	76.13
Distribution of value added (%)	15.82	19.16	65.02
Mean VA/worker in category (OAME=1)	1	1.85	15.37

*Source:* Calculations from ASI & NSS unit level data (2010)

Employment estimates from the National Sample Survey's Employment Unemployment Survey indicate that between 1999-2000 and 2011-12, the increase in manufacturing employment was 15.76million (about 1.3 million per year)<sup>4</sup>. The organized manufacturing sector created only 7.57 million jobs of this total increase in manufacturing<sup>5</sup>. This amounts to an increase of approximately 0.63 million per annum. Clearly, this rate of job creation falls severely short of the requirements of productive jobs for the 7-8 million youth expected to enter the job market each year in the next ten years. Also, results from the ASI which covers formal firms registered under the Factories Act reveal that between 1999-2000 and 2010-11 employment in the organized manufacturing sector grew at the rate of 4.6% per annum<sup>6</sup>. For the same period, real value added in organized manufacturing grew at 10.2% per annum. The growth rate of employment was roughly half the growth rate of value added.

It is, therefore, imperative to examine why the role of the organized manufacturing sector in employment creation has been so modest in India. Why has high industrial growth in value added not been accompanied by commensurate increases in industrial employment? And more importantly, what are the appropriate policy responses that can help accelerate the growth of productive employment in this sector? There exists a vast literature which

<sup>4</sup> Sectoral breakdown of employment as per NSS's Employment Unemployment Survey 1999-2000 and 2011-12 is reported in the Appendix.

<sup>5</sup> Employment in the organized manufacturing sector increased from 13.13 million in 1999-2000 to 20.7 million in 2011-12.

<sup>6</sup> Total employment in the organized manufacturing sector as reported by ASI increased from 7.9 million in 1999-2000 to 12.2 million in 2011-12. For the same period, NSS reported an increase from 13.13 million to 20.7 million. It is important to clarify the reason for the difference in the estimates reported by ASI and NSS. Even within the organized manufacturing sector, there are two types of employment: formal and informal. NSS reports the broader definition of organized manufacturing including both formal and informal employment, while ASI reports the tighter definition focusing on formal employment.

examines the performance of the organized manufacturing sector and the reasons behind its lackluster performance despite extensive reforms, in particular, the liberalization of the industrial licensing regime undertaken over the last couple of decades<sup>7</sup>. This paper, however, focuses its analysis only on the last decade (1999-2000 to 2010-11); a time when India recorded its highest decadal growth averaging 7.4%. The immediate concern is that if employment growth has been so low during a period of high output growth, it will probably become even worse now when GDP growth has weakened so much.

This paper attempts to study the above mentioned issues in the following manner. We begin by examining key trends in the organized manufacturing sector in Section 2. Is it the case that the capital intensity of production in the manufacturing sector increased over the decade, leading to fewer workers being employed? What is the nature of employment created during this period? Have there been disparities in the performance of the manufacturing sector and its potential for employment creation across states of India? In Section 3, we discuss what factors have constrained the growth of organised manufacturing in India and how the nature of the debate around these issues has changed with action shifting to the state level in the post liberalization era. In Section 4, we empirically analyse the disparities in the performance of the manufacturing sector across industries and states. In doing so, we examine whether the growth of the manufacturing sector has been driven by capital or labour intensive industries, and what is the role of state level policies and infrastructure availability in explaining differences in the performance of the manufacturing sector? Section 5 presents the conclusions.

The main findings of the paper are as follows. Recent economic growth has benefited industries which rely more on skilled workers and capital as opposed to unskilled/low skilled workers. This result combined with the rising capital intensity of production in both capital and labour intensive industries partly explains the limited contribution of the manufacturing sector to employment generation. This has been accompanied by deterioration in the quality of jobs being created, reflected in the sharp increase in the share of contract workers over time. Besides, industrial growth has been uneven at the regional level and there has been concentration of industrial activities in certain regions. Given that the days of industrial licensing are gone, markets are influenced not only by regulations enacted by central government, but also those enacted by state governments. Therefore, much of the action today for improving the business environment needs to be taken at the state level. We find that states with more inflexible labour regulations have witnessed slower growth in employment in manufacturing than states with more flexible labour market regulations. However, it would be incorrect to put the entire onus of the dismal performance of the manufacturing sector on labour regulations. This is because most stringent labour regulations affect only permanent workers and firms are increasingly getting around these by hiring contract workers. Moreover, factors such as cumbersome product market regulations and infrastructural bottlenecks have also adversely affected the growth of the manufacturing sector. The two new factors which have become increasingly important in constraining the

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<sup>7</sup> Goldar(2000), Aghion et al(2006), Besley & Burgess (2004), Gupta, Hasan & Kumar(2008), Mehrotra et al(2014)

growth of organised manufacturing are the difficulties in securing environmental clearances and acquiring land. We attempt to examine the former, but find that it has no statistically significant effect on industrial performance. This, however, may well be a result of the fact that the index used for this purpose is unable to appropriately capture the difficulties in securing environmental regulations at the state level. The problems in acquiring land due to agonizing land acquisition processes are likely to emerge as a serious constraint in the growth of the manufacturing sector in the future. However, given the complexities in constructing an appropriate index (and the absence of such a variable in the literature), which captures the differences in acquiring land at the state level, we are unable to examine this factor in our empirical analysis<sup>8</sup>.

## **2. Examining Key Trends in India's Manufacturing Sector over the last decade**

The slow growth of employment in the organised manufacturing sector despite the strong growth in manufacturing output over the last decade is a cause of much concern. In order to understand this disconnect between output and employment growth, we first examine trends in the capital intensity of production and whether there has been a substitution of labour by capital intensive technology. Given that employment generation is the focus of our discussion, we then look at how the composition of employment across the manufacturing sector changed over the last decade. Finally, we examine how the manufacturing sector is spread across states and what changes have taken place in the share of different states over the years.

The data used in this analysis is from the Annual Survey of Industries (ASI), the most comprehensive annual database on organised manufacturing in India<sup>9</sup>. We use disaggregated industry level data at the three digit level for the time period 1999-2000 to 2010-11 for 18 states of India. It is important to mention that there are three different industrial classifications used over this time period. For the surveys between 1998-99 and 2003-04 the industrial classification used was NIC-1998, between 2004-05 and 2007-08 it was NIC -2004 and 2008-09 onwards it was NIC-2008. Therefore, we undertake a concordance exercise across these different classifications to make the dataset comparable as per the NIC-2004 classification. We are finally left with 57 industries.

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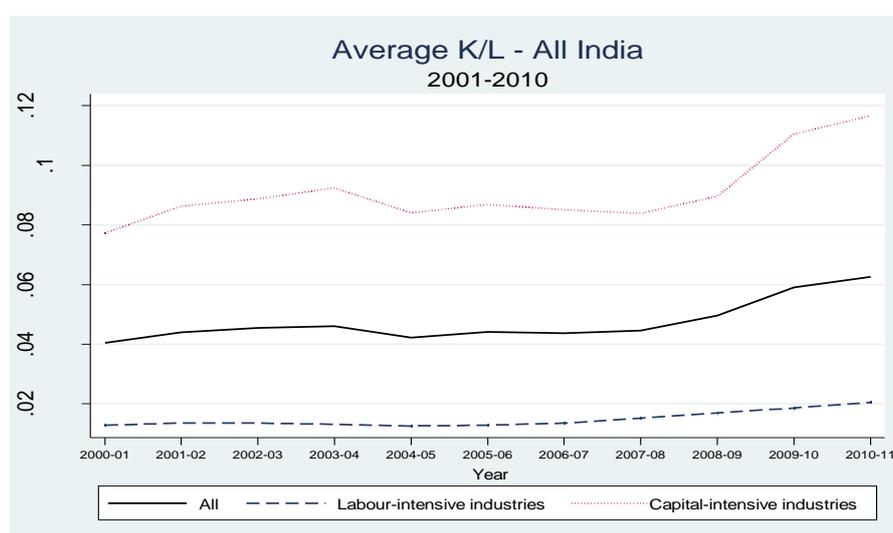
<sup>8</sup> Different states have adopted diverse approaches for dealing with the problems of land acquisition. Gujarat has a land pooling model whereby 50% of the land is acquired while the remaining 50% is left with the original owners giving them a stake in the upsides generated by land monetization. In Haryana and Rajasthan, trunk and industrial infrastructure are created by the state governments but private developers directly participate in other activities. For future research, it is important to create an appropriate index which captures differences in the ease of acquiring land at the state level.

<sup>9</sup> Although, the NSS database covers both organized and unorganized sector, it does not provide comparable annual data on the unorganized sector, making it difficult to study both together. Hence, we focus on ASI in analysis.

## 2.1 Capital Intensity of Production Increased

The rising capital intensity<sup>10</sup> of production in India's manufacturing sector since 1980 is well established in the literature (Das & Kalita, 2010, Hasan, 2010 and Goldar 2000). Figure 1 indicates that over the last decade too, capital intensity of production has been rising. Importantly, if we classify industries on the basis of their capital intensity<sup>11</sup>, we find that this ratio has increased not just in capital intensive but also labour intensive industries. We compute the trend growth in capital intensity of production across industries at the three digit level over the last decade and find that the capital labour ratio has been rising for most industries (Table 2). Importantly, this is the case not just for capital intensive industries but also labour intensive industries. Rising capital intensity of production, especially in labour intensive industries, is a cause of concern as it raises doubts about the capacity of the manufacturing sector to absorb labour.

**Figure 1: Capital Intensity of Production**



Source: Calculations from ASI published statistics (several years)

Although, rising capital intensity is reflective of technological transformation, as countries use more capital intensive techniques as they get richer, it has been shown that India uses more capital intensive techniques of production in manufacturing than countries at similar level of development and similar factor endowments (Hasan et al, 2013). It is widely believed that India's rigid labour regulations and employment protection legislation (which we will

<sup>10</sup> Capital intensity is defined as the ratio of real fixed capital to total persons engaged. Capital is measured by fixed capital as reported in ASI. This represents the depreciated value of fixed assets owned by the factory on the closing day of the accounting year. It is deflated using WPI for machinery and equipment. Total persons engaged includes workers (both directly employed and employed through contractors), employees other than workers (supervisory, managerial and other employees) and unpaid family members/proprietor etc.

<sup>11</sup> In order to classify industries as labour or capital intensive, we calculate the capital intensity for all industries in the organized manufacturing sector for every year from 1999 to 2011. An industry is classified as labour intensive if its capital intensity is below the median value for the manufacturing sector throughout the decade. Similarly, an industry is classified as capital intensive if its capital intensity is above the median value for the manufacturing sector throughout the decade. The remaining industries are classified as ambiguous.

discuss in detail later) are among the most stringent in the world. They have reduced the incentive of firms to hire workers on permanent contracts and pushed them towards more capital-intensive modes of production. In fact, when we compute the trend growth in capital intensity over the last decade at the state level (details are reported in the appendix), we find that on average the growth in capital intensity was higher in states with more inflexible labour regulations as compared to states with flexible labour regulations<sup>12</sup>. However, as pointed by Sen & Das (2014) stringent labour regulations might be able to explain the level of labour intensity, but to explain the decreasing labour intensity over time, labour regulations would need to become tighter over time. Since, this has not happened in an absence of pro-worker legislation for the last two decades, they attribute the increasing capital intensity to increases in the ratio of real wage rate to rental price of capital. This in turn has been mostly due to a fall in the relative price of capital goods, driven by trade reforms and falling import tariffs on capital goods over time.

**Table 2: Trend growth rate in capital intensity of production by industry( NIC, 2004- 3 digit level)**

(2000-01 to 2010-11)			
Labour intensive industries		Capital intensive industries	
NIC	Trend growth (%)	NIC	Trend growth (%)
152	5.77%	151	3.47%
153	9.19%	155	2.56%
154	7.29%	210	3.08%
160	4.41%	231	8.97%
172	2.29%	232	1.10%
173	-1.56%	241	0.14%
181	1.47%	242	5.59%
182	16.89%	243	3.19%
191	2.27%	251	3.29%
192	0.48%	252	-0.84%
201	11.82%	261	1.78%
202	5.78%	269	1.53%
281	10.45%	271	5.01%
289	5.62%	272	7.60%
291	4.10%	293	2.00%
292	4.99%	300	1.70%
311	6.08%	313	-2.28%
312	3.28%	314	1.52%
331	-3.73%	322	8.93%
333	-8.92%	323	5.65%
352	7.84%	341	2.52%
361	-0.25%	343	3.47%
369	-0.08%		

*Source:* Calculations from ASI published statistics (several years)

<sup>12</sup> States are classified as flexible or inflexible on the basis of Gupta, Hasan, Kumar's(2009) classification. This is discussed in detail in Section 4.

Importantly, with growing capital intensity, the role of capital vis-à-vis labour has increased and the share of profits in gross value added has risen by about 15% (table 3). The share of wages to workers to GVA has fallen considerably (more than halved), despite the proportion of these workers in the total persons engaged remaining stable<sup>13</sup>. The rising capital intensity of production coupled with the declining share of wages in GVA does raise the issue of whether it is justifiable for a relatively labour abundant country like India with low wages to be increasingly using more capital intensive technology.

**Table 3: Changes in Key Distribution of Value Added**

Interest paid/ GVA		Profits/ GVA		Wages to workers/ GVA		Total Emoluments/GVA	
2000-01	2010-11	2000-01	2010-11	2000-01	2010-11	2000-01	2010-11
38.64%	10.60%	32.65%	47.03%	26.9%	10.6%	46.6%	26.4%

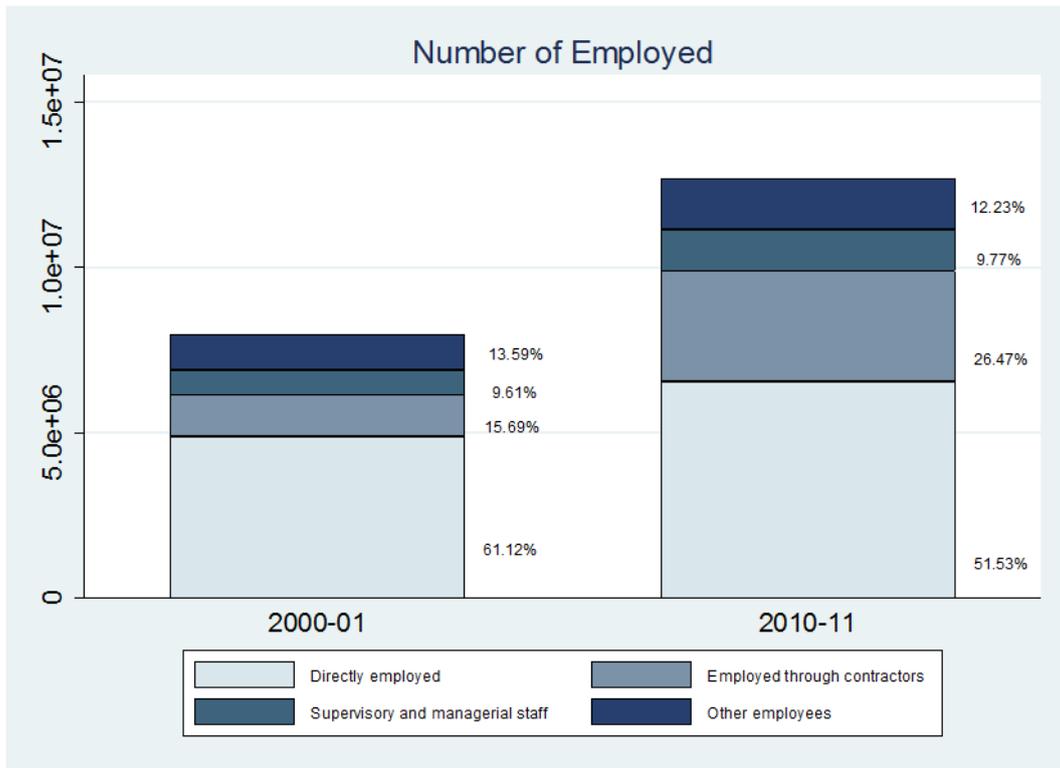
Source: Calculations from ASI published statistics (2000 and 2010)

## 2.2 *Increasing Contractualisation of Workforce*

Although the Contract Labour Act prohibits appointment of contract workers for perennial tasks, the last decade saw a sharp growth in contract workers at the expense of regular employment (Figure 2). The share of contract workers in total employment in the organized manufacturing sector rose from 15.7% in 2000-01 to 26.47% in 2010-11, as there was a substitution of directly employed workers by contractual workers. Consequently, the share of directly employed workers fell from 61.12% to 51.53% in the same period. Two reasons have been attributed to this increasing informalization (Goldar & Aggarwal, 2012). First, the use of contract workers provides a means of getting around stringent labour regulations, particularly IDA, as contract workers do not come under the purview of labour laws that are applicable to directly employed workers in labour markets. Second, increased import competition has led to informalization of industrial labour since the lower wages of informal workers and the savings made on the expenditure of worker benefits helps in reducing costs and thus improving competitiveness. Sen, Saha & Maiti (2010) present econometric evidence indicating that stringent labour regulations have led to greater use of contract workers in organized manufacturing.

<sup>13</sup> The ratio of workers to total persons engaged was 76.85% and 78.35% in 2000-01 and 2010-11 respectively.

**Figure 2: Composition of Employment in Organised Manufacturing Sector**



Source: Calculations from ASI’s published statistics (2000-01 and 2010-11)

The increasing contractualisation of the workforce is a cause of serious concern as it reflects deterioration in the quality of jobs being generated. Not only are wages paid to contractual workers relatively low as compared to regular workers, but they also do not enjoy social security cover under different legislative provisions (such as Employees’ Provident Fund Act 1952, the Employees’ State Insurance Act 1948, the Workmen’s Compensation Act 1923 and the Maternity Benefit Act 1961) and work under short-term contracts. Given the deplorable conditions under which they work, an increase of such jobs will certainly not meet India’s challenge of productive employment creation. Importantly, since these workers can be easily shed, given the weak contracts under which they are employed, there is also a big question mark on the sustainability of employment growth driven by growth of contract workers (Sood et al, 2014).

### 2.3 *Inter-State Disparities in Manufacturing Performance*

An important feature of the industrial scenario in India is that the manufacturing sector has not grown uniformly across states. The tremendous disparity in the state level performance of the formal manufacturing sector in the post reform period is well established in the existing literature (Papola et al, 20011). Some states have achieved a high level of industrialization while others have been lagging behind. For instance, the contribution of the manufacturing sector to GSDP at end of decade stood at 29.38% in Gujarat, 20.69% in Maharashtra and 21.2% in Tamil Nadu, while it was a mere 5.40% in Bihar. Moreover, the share of states in

total value added and employment in the organized manufacturing sector is significantly different (Table 4). The regional concentration of industries is particularly striking. The top three states in terms of shares in gross value added (Maharashtra, Tamil Nadu & Gujarat) at the end of the decade were also the top performers at the beginning of the decade. These three together accounted for 45% of total gross value added in the manufacturing sector over the decade. In fact, if we were to rank states on the basis of their shares to GVA and employment, we find that this ranking has not changed much over the decade. The more robust growth of the manufacturing sector in some states as compared to others indicates the importance of state level factors and policies. Establishing whether certain elements of state policy or institutional framework are causal drivers of the pattern of industrial performance is therefore imperative. The variation in the state level institutional environment and infrastructure provides a fertile ground for empirical exploration to analyse the impact of these factors on employment and output at the state level in Section 4.

**Table 4: State-wise Shares of Employment and Value Added**

State	Share in total employment		Share in total GVA	
	2000-01	2010-11	2000-01	2010-11
Andhra Pradesh	10.2	11.4	8.3	6.2
Assam	1.3	1.4	0.9	0.9
Bihar	0.8	0.8	0.6	0.5
Chhattisgarh	1.4	1.2	1.9	1.7
Gujarat	10.2	9.4	13.3	12.9
Haryana	4.3	3.8	3.6	4.0
Himachal Pradesh	1.2	0.5	2.5	0.9
Jharkhand	1.5	2.2	2.7	2.8
Karnataka	6.2	5.9	5.9	5.7
Kerala	3.0	3.9	1.2	2.3
Madhya Pradesh	2.4	3.2	2.5	4.2
Maharashtra	13.4	14.7	20.4	21.1
Odisha	2.2	1.6	2.6	1.7
Punjab	4.8	4.5	2.8	2.9
Rajasthan	3.4	2.9	2.6	3.6
Tamil Nadu	15.3	14.2	10.4	11.4
Uttar Pradesh	6.4	6.8	6.2	7.0
Uttarakhand	2.3	0.5	3.5	0.6
West Bengal	5.0	7.1	3.0	4.0

*Source:* Calculations from ASI's published statistics, various years

### 3. What has constrained the growth of India's manufacturing sector?

When India embarked on planned development, there was a general consensus that the country's economic backwardness was due to its very low level of industrialization. Consequently Indian planners emphasized rapid industrialization, especially the creation of

industries producing capital goods. From the early 1950s up to until the early 1980s, the evolution of India's manufacturing sector was guided by the industrial and trade policies that protected domestic industry and gave the state a central role in investment decisions. The centerpiece of centrally planned industrialization in India was the Industries (Development & Regulatory) Act of 1951. Under the act, every investor over a very small size needed to obtain a license before establishing an industrial plant, adding a new product line to an existing plant, substantially expanding output or changing a plant's location. This allowed the government to allocate plan production targets to firms and impose binding constraints to entry and growth for most firms. A system of import licensing and other trade policy measures were also designed to foster import substitution oriented industrialization. During the 1980s and the 1990s, there were two main waves of reforms. The first occurred in 1985, when around one-third of all three-digit industries were delicensed. The second wave of reforms launched in 1991 were a watershed moment in India's history; industrial policy no longer worked through an elaborate system of industrial licensing, tariff barriers were reduced and restrictions on foreign direct investment relaxed.<sup>14</sup>

Despite these important reforms, the growth of the manufacturing sector did not accelerate. There have been some key areas where reforms have been lacking and it is believed that these have continued to remain stumbling blocks to growth of manufacturing. India's rigid and archaic labour market regulations are among the most stringent in the world. Chapter VB of the Industrial Disputes Acts (1947), which makes it necessary for firms employing more than 100 workers to obtain the permission of state governments in order to retrench or lay off workers stands out in this context. One of the most influential studies in this area is by Besley and Burgess (2004), which constructs an index summarizing state-level amendments to the Industrial Disputes Act (IDA) between 1949 and 1992. The index is used along with several control variables to explain state level outcomes corresponding to the organized manufacturing sector using industry level panel data for 1958-92. The authors identify a negative impact of pro-worker regulation on output, investment, employment and labour productivity among registered manufacturing firms. Ahsan & Pages (2009) also use the Besley-Burgess index but decompose it into amendments that reduce transaction costs of initiating and sustaining industrial disputes and those that increase job security and reduce labour flexibility. Their results suggest that regulations that increase the cost of settling disputes are more costly for employment than the restrictions directly imposed by the IDA. Despite the extensive use of the Besley-Burgess index in the literature, it has been heavily criticized. Bhattacharjea (2006, 2009) claims that the Besley-Burgess scoring system can erroneously classify a state as pro-employer or pro-worker with just one or two amendments to the IDA in the 50 years covered by the index. Nagaraj (2004) points out this index focuses only on IDA, abstracting from several other laws which are responsible for inflexibilities in the labour market. OECD (2007) has constructed a more comprehensive measure of labour

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<sup>14</sup> In this year, industrial delicensing was effectively abolished, except for a small number of industries where it was retained in these industries "for reasons related to security and strategic concerns, social reasons, problems related to safety and overriding environmental issues, manufacture of products of hazardous nature and articles of elitist consumption" (Government of India, 1991).

market regulations, which includes information not just on IDA but seven additional areas: Factories Act, State Shops and Commercial Establishments Acts, Contract Labour Act, role of inspectors, maintenance of registers, filing of returns and union representation. Using this revised measure and plant level data from ASI for the period 1998-99 through 2007-08, Dougherty et al (2011) find that firms in labour intensive industries benefited the most from labour reforms in their states. On average, firms in labour intensive industries have TFP residuals 14% higher than those registered for their counterparts in states with more stringent labour laws.

While strict labour laws have been widely blamed for the poor performance of organized manufacturing, it would be incorrect to put the entire onus on them. Infrastructure and product market regulations have also been major challenges (Gupta et al, 2008). Inadequate development of physical infrastructure i.e. the poor quality of power supply, road networks and ports and airports are critical stumbling blocks to the growth of the manufacturing sector. Regulatory bottlenecks for doing business in India still exist. The difficulties in the procedures and costs for starting and, especially closing a manufacturing business in India are among the most cumbersome in the world. According to the World Bank's "Doing Business 2014<sup>15</sup>", India ranked 179 in terms of ease of doing business. Credit constraints due to weaknesses in the financial sector have held back small and medium sized firms from expanding (Banerjee & Duflo, 2008).

While the above mentioned factors have been often cited as the key factors constraining the growth of the manufacturing sector, two new factors have emerged as stumbling blocks to industrialization over the last few years i.e. problem of land acquisition and difficulties in securing environmental clearances. It is widely believed that the new Land Acquisition, Rehabilitation and Resettlement Act, 2013 has nearly brought acquiring land to a halt, impacting large projects which have hit manufacturing growth<sup>16</sup>. Also, the dilatory procedures for securing environmental clearances for new industrial projects have critically impacted the growth of the manufacturing sector.

The nature of the debate around the factors constraining the growth of the manufacturing sector has also changed in terms of the role of central vis-a-vis state governments. With liberalization, gone are the days when industrial licensing was the key hurdle and the centre was the key factor. After the reforms of 1991, there has been a sizeable reallocation of economic power in India's federal set up from central to state level. Liberalization has made the creation of a more favourable investment climate at the state level a more pressing concern. In that sense, action has shifted to the state level. Importantly, the constitutional arrangements governing India's federal structure designate control over certain aspects of

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<sup>15</sup> The ranking of countries are based on various parameters including starting a business, dealing with construction permits, getting electricity, registering property, getting credit, protecting investors, paying taxes, trading across borders, enforcing contracts and resolving insolvency

<sup>16</sup> The Act has made it mandatory to get the consent of at least 70% of the affected people for acquiring land for PPP projects and 80% for acquiring land for private companies. The new law provides compensation four times the market price for rural land and up to twice the value of urban land for acquiring for public works or industrial activities. The Act stipulates establishment of a state social impact assessment unit, the office of a commissioner, rehabilitation and resettlement, and a state-level monitoring committee by each state government.

regulatory policy to the state governments and states may implement their own laws in certain areas, or amend central legislation prior to implementation. This allows state government to undertake the institutional reform necessary for improving the business regulatory environment at the state level.

For instance, labour laws come under the concurrent list i.e. under joint jurisdiction of state and central governments. State governments have made extensive amendments to labour laws such as the IDA in the past. Furthermore, it has been seen that the effects on registered manufacturing output of dismantling the licensing system varied across Indian states depending on the nature of their labour market regulations. States with pro-employer labor market institutions grew more quickly than those in pro-worker environments in response to the same delicensing reform (Aghion et al, 2006). Similarly, in terms of business regulations, over two-thirds of regulations applying to manufacturing enterprises are generated and administered in Indian states. An OECD study (2007) finds that states which were able to improve the business regulatory environment (captured by variables such as barriers to entrepreneurship, the extent of state control and administrative regulation), and liberalize their product markets were able to attract more foreign direct investments, have a larger share of employment in the private formal sector and have higher labour productivity in comparison to states which were not able to reform their restrictive product markets.

In the context of environmental issues, too, there is a basic division of power between center and states in India, reflecting the federal nature of the Indian constitution. The mandate of the Central Pollution Control Board (CPCB) is to set environmental standards for all plants in India and co-ordinate the activities of the State Pollution Control Boards (SPCBs). The implementation of environmental laws and their enforcement, however, are decentralized and the responsibility of SPCBs. Evidence suggests that while all over India, standards for industrial pollution are common, there are wide variations in enforcement across states. In fact, it has been argued that although states cannot compete by lowering environmental standards, they can get around this by lax enforcement to attract new investment. The impact of variations in enforcement and regulation by SPCBs on industrial performance of states is an issue not examined so far. In the next section, we will attempt to empirically examine the role of each of the above-mentioned factors.

## **4. Empirical Analysis**

### ***4.1 Data & Econometric Framework***

Given the considerable disparity in the performance of the manufacturing sector across states over the last decade, it is important that we identify the drivers of output and employment growth to understand the role of state level policies. However, given that there is heterogeneity in the performance of industries within the manufacturing sector, it is imperative to identify the nature of industries that have performed well. Such an exercise is important as looking at overall performance of the manufacturing sector may mask inter-industry heterogeneity. Also, it is critical in understanding whether the contribution of manufacturing to employment has been limited because it has been driven by growth of

capital intensive and not labour intensive industries, which have a higher employment elasticity of output.

Our empirical analysis is based on ASI data for 57 three-digit manufacturing industries for the time period 1999-2000 to 2010-2011 for 18 states of India. We begin by classifying industries on the basis of their labour intensity and skill intensity. We define labour intensity as the ratio of total persons engaged to real fixed capital stock. Industries are classified as labour or capital intensive using the criteria outlined in Section 2. Skill Intensity is defined by the percentage of workers with secondary or higher education in the industry. An industry is classified as skill intensive if the percentage of workers with secondary or higher education in that industry exceeds the median for all industries<sup>17</sup>. Using the following specification we examine the heterogeneity in the performance of the manufacturing sector.

$$y_{ist} = \alpha_{is} + \beta T + \theta(\text{Industry Characteristic}_i) * T + \mu(\text{other controls}) + \varepsilon_{ist} \quad (1)$$

The outcome variable,  $y_{ist}$ , varies over industry, time and state. We examine industrial performance in terms of gross value added. To compute the real gross value added, we compute a NIC-2004 specific wholesale price index for each of the industries covered in the analysis<sup>18</sup>. We include industry-state fixed effects and a time trend. Industry characteristics are defined by labour and skill intensity.

Next, we turn to the classification of states. Given the disparities in the state level policies and performance of the manufacturing sector, we classify states on the basis of three measures—Labour Market regulations (LMR), Product Market Regulations (PMR) and the Enforcement of Environmental Regulations (EER) by the State Pollution Control Board. We then attempt to identify the effect of these parameters on the industrial performance of the state. As discussed previously, quantifying differences in LMR across states is a contentious subject in the existing literature. Here, we use an index constructed in a recent study by Gupta, Hasan & Kumar (2009). They create a composite measure of LMR across states by combining information from three key studies<sup>19</sup>. On the basis of this composite index, they

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<sup>17</sup>This definition of skill intensity is a rather narrow one as it simply looks at education level of workers and does not take account of factors such as vocational training. The classification of industries on the basis of their skill intensity is an area that needs further research.

<sup>18</sup> ASI reports variables in nominal value terms. Any analytical work requires deflating these variables. An obvious candidate for this is the wholesale price index (WPI) series. However, we cannot use the WPI as a deflator directly because while ASI follows the NIC classification of industries, WPI is constructed with a view to capturing price movements based on nature of commodities and final demand. Therefore, we approximate commodities based on the nature of economic activities and map NIC activities to WPI commodities, and create a WPI for each of the industries in the analysis.

<sup>19</sup> They examine state-level indexes of labor regulations developed by Besley and Burgess, Bhattacharjea (2008), and OECD (2007). The Besley and Burgess measure relies on amendments to the IDA as a whole. Bhattacharjea's measure focuses exclusively on Chapter VB of the IDA—i.e., the section that deals with the requirement for firms to seek government permission for layoffs, retrenchments, and closures. Bhattacharjea considers not only the content of legislative amendments, but also judicial interpretations to Chapter VB in assessing the stance of states vis-à-vis labor regulation. The OECD study is based on a survey of experts and codes progress in introducing changes in recent years to not only regulations dealing with labor issues, but also the relevant administrative processes and enforcement machinery. The regulations covered by the survey go

categorize states' LMR as flexible, neutral and inflexible assigning scores of 1, 0 and -1<sup>20</sup>. PMR measures at the state level are obtained from OECD (2007). These assess the regulatory environment facing businesses across Indian states. The information gathered covers two sets of issues: the extent of “state control” and “barriers to entrepreneurship”<sup>21</sup>. A higher value of the indicator represents a more restrictive regulatory regime in product markets. To capture the effectiveness of environmental regulation at the state level i.e. the differences in enforcement and monitoring of the various State Pollution Control Boards, we use a dummy variable constructed on the basis of three variables i.e. percentage of factories taking up pollution abatement facilities, percentage of capital investment of the total capital investment for pollution control and percentage of running expense of the total running expense for pollution control. This is based on state wise ASI 1997-98, which gives the data for investment in pollution control as well the data for ISO9000 certified units for Indian states (Jamalpuria, 2007).<sup>22</sup>

To capture the state level differences in infrastructure variables, we look at two different indicators. The first is the number of kilometers of roads scaled by the population of the state. States with more extensive transport networks should be better able to facilitate economic activity and attract investors. The second is transmission and distribution losses of state level electricity boards. States with better power networks should be more attractive investment locations. Kochhar et al (2006) argue that this variable is a joint measure of infrastructure capability and state policies affecting the quality of infrastructure and business environment.

Using the following basic specification, we exploit the state-level variation in the above-mentioned characteristics to identify the effect of these parameters on the performance of the manufacturing sector:

$$y_{ist} = \alpha_{is} + \beta T + \delta(\text{State Regulatory Parameter}_s) * T + \gamma(\text{State Infrastructure Indicator}_s) * T + \mu(\text{other controls}) + \varepsilon_{ist} \quad (2)$$

In equation 2,  $y_{ist}$  is performance outcome of industry  $i$  in state  $s$ , in year  $t$ . We analyse industrial performance outcome by both real gross value added and employment. Since our measures of LMR, PMR and EER are time invariant and measured at the state level, state fixed effects get washed out and we cannot include them. We include industry fixed effects,

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well beyond the IDA and include the Factories Act, the Trade Union Act, and Contract Labour Act among others.

<sup>20</sup> Andhra Pradesh, Rajasthan, Tamil Nadu, UP and Karnataka are classified as having flexible labour regulations. Maharashtra, Orissa and West Bengal are classified as having inflexible labour regulations. Assam, Bihar, Gujarat, Haryana, Kerala, Madhya Pradesh and Punjab are classified as the neutral states.

<sup>21</sup> The extent of state control covers issues such as public ownership of enterprises, the scope of public enterprise sector, its size, and the extent of direct control over business enterprises. Barriers to entrepreneurship cover administrative burdens on start ups and administrative rules and procedures for obtaining clearances and approvals of various types among other things.

<sup>22</sup> Given that there exist a number of legislations pertaining to labour, land and environmental issues, and that there have been many state level amendments recently, it is important to construct an updated index which captures these state level variations. While this is beyond the scope of this paper, this is an essential exercise for future research.

however refrain from using year-fixed effects as we introduce time trend,  $T$ , in the specification. We also introduce industry-state fixed effects. The industry-state fixed effects can account for variables that are specific to state and industry combinations. Full collinearity restrains us from including industry-year, state-year, and industry-state fixed effects. The coefficients  $\delta$  and  $\gamma$  capture the effect of state level regulations on industrial performance. Given that LMR is higher when state level labour reforms are more flexible, a positive coefficient on this term implies that industrial performance of manufacturing firms is better in states with more flexible labour regulations. On the other hand, since higher PMR and EER values imply a more restrictive product market and stringent environmental regulation, a negative coefficient on these terms imply that firms in states with more stringent regulations perform worse. The variable  $\varepsilon_{ist}$  is an error term and to deal with heteroscedasticity and possible serial correlation in the error term, the standard errors are clustered by state-industry combinations. We also include additional control variables in our estimates such as initial per capita income of states, since this may account for omitted variables which might vary across states. To account for initial comparative advantage which might affect regulation, we include the initial share of industry  $i$  in state  $s$ , which accounts for.

We augment this basic specification to take advantage of state level variation in labour regulation, and extend it to incorporate industry level variation. We explore the possibility that labour market regulations affected labour and capital intensive industries differently. By comparing cross industry differences in states with different levels of labour reform, we can evaluate the effect of labour reform. Following Gupta, Hasan, Kumar (2008), we include an interaction term between labour intensity of industries and labour market regulations. The coefficient  $\theta$  captures if industries with a specific characteristic, in this case higher labour intensity, perform better in states with more flexible labour regulations.

$$\begin{aligned}
y_{ist} = & \alpha_{is} + \beta T + \delta(\text{State Regulatory Parameter}_s) * T \\
& + \gamma(\text{State Infrastructure Indicator}_s) * T \\
& + \theta(\text{State Regulatory Parameter} * \text{Industry Characteristic}) * T \\
& + \mu(\text{other controls}) + \varepsilon_{ist}
\end{aligned}
\tag{3}$$

## 4.2 Results & Interpretation

Table 5 indicates the disparities in the performance of the manufacturing sector across industries. Column 1 of this table shows that that labour intensive industries have grown slower in terms of output than their respective control group. This is reflected in the negative and statistically significant coefficient on the log of labour intensity. This is contrary to what one would expect in an economy where labour is a source of comparative advantage. In column 2, we find that skill intensive industries i.e. industries more dependent on high skilled workers grew faster than their respective control group. Further, when we control for both skill intensity and labour intensity, we find the same results. As expected intuitively, we also find that labour intensive industries have a higher employment elasticity of output (results reported in appendix). That labour intensive industries which have a higher employment

elasticity of output grew significantly slower than capital intensive industries is a cause of greater concern from an employment generation perspective. On the other hand, skill intensive industries do not have a significantly higher employment elasticity of output<sup>23</sup>, indicating that they are unlikely to generate much employment for India's large unskilled/low-skilled labour force. Thus, over the last decade, it has been the relatively capital and skill intensive industries and not labour intensive industries which have grown faster within the manufacturing sector. This reaffirms the common perception that industrial performance in India has been such that labour intensive industries and industries which can absorb the unskilled labour have not performed well. Consequently, employment generation has been sluggish<sup>24</sup>. If growth of unskilled-labor-intensive manufacturing industries remains on its current trajectory, India is at risk of bifurcating the economy, with those benefiting from growth and those left out. The failure of labour intensive manufacturing to grow faster and generate employment is likely to leave too many bottled up in low productivity jobs.

**Table 5: Industry-wise Variation in Performance of Manufacturing Sector**

	(1)	(2)	(3)
VARIABLES	logGVA	logGVA	logGVA
Log share of industry i in VA in 98 interacted with time	-0.024*** (-11.418)	-0.017*** (-8.360)	-0.023*** (-11.516)
Log of labour intensity*time	-0.037*** (-11.885)		-0.037*** (-11.960)
Skill dummy interacted with time		0.036*** (4.552)	0.041*** (5.313)
Constant	3.265*** (84.330)	3.234*** (79.155)	3.267*** (84.770)
Observations	9,776	9,783	9,776
R-squared	0.291	0.250	0.298
Number of panelvar	790	790	790

*Robust t statistics are given in brackets. \* significant at 10%; \*\* significant at 5%; \*\*\* significant at 1%.*

Next, we exploit the variation in state level characteristics as outlined in equation 2. Table 6 presents the results of the empirical analysis wherein industrial value added (GVA) is the dependent variable. We find that states with higher initial per capita income have witnessed faster growth in industrial value added. We also find that it is not the case that states witness

<sup>23</sup> Results for employment elasticity are reported in the Appendix.

<sup>24</sup> Past policies which gave strategic priority to tertiary education and capital made skilled labour relatively cheap and have led to faster growth of capital or skilled labour intensive industries.

a higher growth in value added in those industries in which they had a comparative advantage to begin with. It appears, therefore, that divergence in industrial production has increased.

In order to examine the impact of regulatory framework at the state level, we include measures pertaining to LMR, PMR and EER one at a time and then together in the regression specification. We find that states experience differential growth in industrial valued added based on their labour market regulations and there is a significant positive relationship between the flexibility of labour markets and the growth in value added. The variation in industrial performance across states also appears to be driven by differences in product market regulation. There is a significant negative relationship between the growth in value added and the restrictiveness of product market regulations. Clearly, the plethora of tangled and tardy procedures to obtain government approvals has stifled the growth of the manufacturing sector. This reinforces the need for state governments to improve their regulatory environment so as to become more competitive and productive and improve the ease of doing business. When we include LMR and PMR simultaneously in these regressions, results do not change. The coefficient on EER is not statistically significant. Based on this, we cannot conclude that the stringency of environmental enforcement at the state level has adversely affected the growth of manufacturing activity in the state. Perhaps, this is because the costs imposed by environmental regulations are not large enough to overpower other costs of doing business. However, this does not preclude the possibility of states using environmental enforcement as a means of attracting new industry.

Next, we include the two different measures of infrastructure in the regression specification. Infrastructure related indicators are strongly correlated with one another and with PMR<sup>25</sup>, hence we do not include them simultaneously in the specification. Moreover, we include the infrastructure indicator at the beginning of the decade to address potential biases from reverse and simultaneous causation. We report results of infrastructural variables only when labour market regulations are included in the specification. Both the infrastructural variables are significant and positive.

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<sup>25</sup> Correlation between Regulatory and Infrastructure variables reported in Appendix

**Table 6: State-wise Analysis of Performance of the Manufacturing Sector**

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
VARIABLES	logGVA	logGVA	logGVA	logGVA	logGVA	logGVA	logGVA	logGVA
Log share of state s in industry i's VA in initial year*time	-0.023*** (-9.346)	-0.025*** (-10.080)	-0.023*** (-9.748)	-0.023*** (-9.336)	-0.024*** (-9.746)	-0.021*** (-8.695)	-0.023*** (-9.342)	-0.023*** (-9.163)
Log initial per capita income * time	0.054*** (4.896)	0.048*** (4.167)	0.054*** (4.187)	0.054*** (4.542)	0.052*** (4.391)	0.051*** (4.292)	0.048*** (4.258)	0.058*** (4.820)
LMR*time	0.029*** (6.174)			0.029*** (5.958)		0.021*** (4.267)	0.027*** (5.727)	0.030*** (6.324)
PMR*time		-0.054*** (-2.785)		-0.031** (-2.155)	-0.029* (-1.850)	-0.042** (-2.114)		
EER*time			-0.006 (-0.828)		-0.006 (-0.853)	-0.003 (-0.446)		
Roads*time							0.019*** (2.880)	
T&D losses*time								0.001* (3.029)
Constant	3.338*** (70.386)	3.287*** (72.044)	3.430*** (71.632)	3.338*** (70.375)	3.430*** (71.667)	3.495*** (69.150)	3.338*** (70.401)	3.338*** (70.354)
Observations	9,415	9,783	8,814	9,415	8,814	8,446	9,415	9,415
R-squared	0.344	0.341	0.346	0.346	0.360	0.347	0.346	0.344
Number of panelvar	760	790	706	760	706	676	760	760

*Robust t-statistics are given in brackets. \* significant at 10%; \*\* significant at 5%; \*\*\* significant at 1%.*

Next we examine differences in industrial performance measured by employment (TPE)<sup>26</sup>. Re-estimating the above mentioned specifications using employment as a dependent variable is particularly important in the context of examining the role of labour market regulations as these regulations are expected to make a big dent on employment. For employment, we use a slightly different specification and include gross value added as an explanatory variable. Since, employment is connected to GVA in an intimate manner, we need to examine movements in employment independent of changes in production.

Table 7 reports the results of this analysis. We find that states with more flexible labour market regulations witness higher growth in employment. This is not surprising as stringent and inflexible labour regulations are expected to hurt employment the most. Next, we control for PMR and EER separately. We find that while states with more restrictive product markets witness lower industrial employment growth, the coefficient on EER is not statistically significant. Once we control for all three regulatory variables together, we find that coefficients on LMR and PMR remain statistically significant with the expected signs. We also control for the two infrastructural related variables and find indicators of infrastructure to have a positive and significant impact on employment generation. Clearly, infrastructure availability is an important factor in explaining the state level heterogeneity in employment growth.

The concern that omitted variables might be driving our results as there maybe other state characteristics correlated with LMR not considered in our analysis, does not seem to be a problem here. We conduct robustness tests where starting with our base specification, we include other state characteristics. In our robustness checks, we use the OECD's labour market regulations index alone, instead of the Gupta, Hasan, Kumar's composite index (2009). We also include other measures of infrastructure such as state level tele-density and average industrial electricity tariffs. Our results on LMR and PMR are robust as the coefficient and significance of our key variables of interest do not change.

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<sup>26</sup> Total employment includes directly employed workers, contract workers and supervisors, managerial staff and other employees.

**Table 7: State-wise Analysis of Performance of Manufacturing Sector**

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
VARIABLES	Log TPE						
Log of GVA	0.412*** (29.698)	0.420*** (31.414)	0.412*** (28.984)	0.412*** (29.763)	0.403*** (27.765)	0.410*** (29.565)	0.411*** (29.509)
Log share of state s in Industry I's VA in initial Year*time	-0.003*** (-2.714)	-0.004*** (-3.251)	-0.003** (-2.575)	-0.003*** (-2.729)	-0.003** (-2.060)	-0.003** (-2.557)	-0.003** (-2.459)
Log initial per capita income*time	0.015*** (2.635)	0.008 (1.383)	0.014** (2.507)	0.011* (1.850)	0.009 (1.580)	0.012** (2.037)	0.023*** (3.796)
LMR*time	0.015*** (6.073)			0.014*** (5.358)	0.012*** (4.338)	0.014*** (5.597)	0.018*** (6.872)
PMR*time		-0.015*** (-3.105)		-0.008* (-1.654)	-0.010** (-2.002)		
EER*time			0.001 (0.201)		0.003 (0.703)		
Roads*time						0.009** (2.571)	
T&Dlosses*time							0.001*** (3.097)
Constant	6.564*** (118.895)	6.483*** (123.581)	6.566*** (114.266)	6.564*** (119.200)	6.662*** (111.488)	6.569*** (118.190)	6.565*** (117.952)
Observations	9,409	9,777	8,808	9,409	8,440	9,409	9,409
R-squared	0.601	0.609	0.601	0.602	0.593	0.602	0.603
Number of panelvar	760	790	706	760	676	760	760

*Robust t statistics are given in brackets. \* significant at 10%; \*\* significant at 5%; \*\*\* significant at 1%.*

Next, we take advantage of the industry level variation in the dataset and examine if labour intensive industries grew slower in states with more inflexible labour regulations. For this purpose, we include an interaction variable between labour intensity of industries and the labour market regulation of the state as outlined in equation 3. Typically, stringent labour regulations should hurt labour intensive industries more, and given that states with flexible labour regulations witnessed faster employment growth, we could expect to see labour intensive industries grow faster in states with more flexible labour regulations. However, we find that the coefficient on this interaction term is statistically insignificant (Table 8) indicating that flexibility or rigidity of labour regulations has had no influence on the growth of labour intensive industries across states. This is contrary to what one would expect, suggesting that there may be well be other dynamics at play in the relationship between LMRs and employment growth. One possibility is that firms have responded to inflexibilities

or rigidities in the labour market in innovative ways such as the greater use of contract, temporary and casual labour.

**Table 8: Did Labour Market Regulations Hurt Labour Intensive Industries More?**

VARIABLES	(1) logTPE	(2) logTPE	(3) logTPE
Log of GVA	0.433*** (29.093)	0.431*** (28.938)	0.433*** (28.996)
LMR*time	0.016** (2.269)	0.015** (2.198)	0.018** (2.511)
Log of labour intensity*time	0.009*** (5.015)	0.009*** (5.108)	0.009*** (5.032)
LMR*Log of labour intensity* Time	-0.001 (-0.297)	-0.001 (-0.315)	-0.001 (-0.347)
Roads*time		0.010*** (3.150)	
T&Dlosses *time			0.001** (2.246)
Constant	6.485*** (110.009)	6.493*** (109.485)	6.485*** (109.344)
Observations	9,408	9,408	9,408
R-squared	0.606	0.608	0.607
Number of panelvar	760	760	760

*Robust t statistics are given in brackets. \* significant at 10%; \*\* significant at 5%; \*\*\* significant at 1%.*

When we examine growth in employment in the manufacturing sector in the empirical analysis, we include both directly employed workers and contract workers in our measure of total employment. As mentioned previously, the most restrictive labour regulations such as the Industrial Disputes Act impact directly employed workers and not contract workers. Indian firms are increasingly getting around rigid employment protection legislation by using contract workers in place of permanent workers. It is, therefore, likely that states with more inflexible labour market regulations have resorted to greater use of contract labour, substituting it for directly employed workers to circumvent rigid employment protection legislations. Calculations from ASI data over the decade indicate that this may well be the case (Table 9). The growth of contract workers far exceeds the growth of permanent workers in inflexible states suggesting that in these states, firms are getting around stringent labour regulations by hiring more contract workers. On the other hand, the growth of directly employed workers who are impacted by stringent labour regulations is lower in inflexible states as compared to flexible states. This perhaps explains why even though we see a

significant positive coefficient on LMR in Table 6 and 7, the size of the coefficient is not very large and the effects are smaller than what one would expect given the intensity of the debate on labour regulations.

Taking this analysis a step forward, we calculate the growth rate of contract and directly employed workers in labour intensive industries specifically. We find that the growth of contract workers in labour intensive industries in inflexible states is approximately four times the growth of directly employed workers in these industries. Moreover, the growth of directly employed persons in labour intensive industries is significantly higher in flexible states as compared to inflexible states. Labour intensive industries in inflexible states appear to meet their labour requirements through increased use of contract labour, and therefore we do not see an adverse effect of rigidity of labour regulations on the performance of labour intensive industries.

It is worth noting that even in flexible states, the growth of contract workers has been significantly higher than that of directly employed workers. In fact, the share of contract workers in total workers has increased in both flexible and inflexible states over the decade (Figure 3). This suggests that looking simply at trend growth rates of contract and directly employed workers across flexible and inflexible states is inadequate to draw any meaningful inferences as labour market regulations are not the only factors responsible for growth of contract workers. There may well be other factors at play. For instance, the lower wages and consequently greater savings made on the expenditure of these workers incentivize firms, both in flexible and inflexible states, to substitute directly employed persons with contractual workers<sup>27</sup>. This is however, beyond the scope of this paper and we intend to examine and control for these factors in a more rigorous manner in the course of future research.

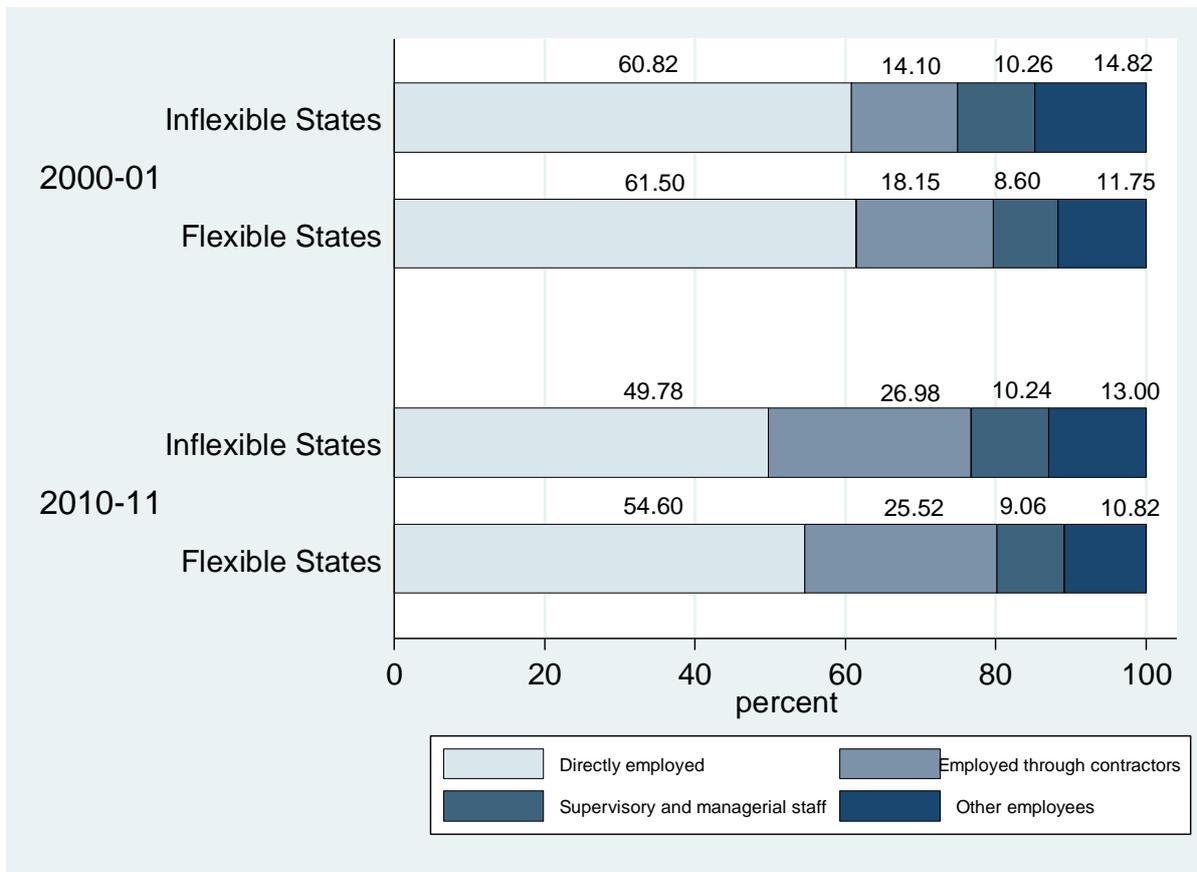
**Table 9: Comparison of growth rate of workers by industry and state characteristics**

State/Industry Characteristic	Workers	Growth Rate (2000-10)
Flexible States	Directly Employed Workers	5.83
	Contract Workers	16.21
Inflexible States	Directly Employed Workers	1.40
	Contract Workers	11.67
Labour Intensive Industries in Flexible States	Directly Employed Workers	6.37
	Contract Workers	15.00
Labour Intensive Industries in Inflexible States	Directly Employed Workers	2.96
	Contract Workers	11.08

*Source:* Calculations from unit level ASI published statistics data (several years)

<sup>27</sup> While the growth rate of contract workers exceeds that of directly employed persons, it is important to mention that the latter still account for a significantly larger share of total workers. The high growth rates of contract workers could partly be a result of the lower initial values of contract workers (i.e. base effect). The increasing contractualization of workers in the formal/organized manufacturing sector however, is a fact that cannot be denied.

**Figure 3: Increasing Contractualisation of Workforce Over the Decade**



Source: Calculations from ASI published statistics (2000 and 2010)

## 5. Conclusion

The informalisation of the organized economy coupled with the overwhelming presence of the unorganized sector has meant that employment in India has continued to be dominated by low productivity activities over the last decade. Despite an acceleration of economic growth during this period, India has faltered in creating productive jobs for its rapidly rising workforce. This decoupling of economic growth and productive employment creation is a cause of much concern. Much of this is attributable to the fact that the changing sectoral distribution of GDP has not been matched by a commensurate change in the distribution pattern of the labour force and that India has witnessed a rather idiosyncratic pattern of development where services have contributed more to growth than manufacturing. Within the manufacturing sector, too, the flourishing sectors are capital and skill intensive industries which generate limited employment opportunities for unskilled workers who then predominantly end up in the informal sector. Moreover, the rising capital intensity of production across both capital and labour intensive industries has meant that fewer additional workers have been added to the manufacturing sector.

Importantly, there are heterogeneities in industrial performance across industries and across states. The role of state level policies in providing an enabling environment for accelerating

the growth of the manufacturing sector is critical. There is scope for improving industrial performance and reducing regional disparities across states by improving government regulations in product and labour markets and by improving infrastructure availability. Our results show that there is a negative relationship between employment growth and labour market regulations. However, given that employers are increasingly getting around these regulations by hiring contractual labour, we must not over emphasize the role of labour market regulations in constraining manufacturing. The debate on India's labour market reforms has acquired new vigour and significance with the Union Cabinet and Rajasthan government approving amendments to key labour laws over the past few months<sup>28</sup>. Though there is an urgent need for labour reforms, amendments need to be made cautiously. The impact of amendments which simply raise the size limit of firms to which the Factories Act, Contract Labour Act and Industrial Disputes Act are applicable is not unambiguous. It is not clear if by lowering the standards of formality, such reforms will encourage the growth of formal employment or simply free more employers from the obligations they currently hold for ensuring job security, health and social protection of their workers and further increase informal employment in the formal sector?

Costs of doing business come from regulations of every kind, and not just labour regulations. Moreover, there are strong interactions between the various kinds of regulations. For instance, if labour regulations were less stringent, some firms who do not even begin in the current environment would doubtlessly emerge and prosper. But the fact that the regulation of business is an added deterrent, it further reduces incentives for starting or expanding businesses<sup>29</sup>. The interactions between different regulations, though difficult to capture empirically, can differ from state to state and play an important part in explaining the heterogeneity in industrial performance. Unless the growth of productive employment in the manufacturing sector is accelerated, the demographic dividend is likely to result in more poor people being left outside of the "good" industrial jobs. The National Manufacturing Policy of the Government of India (2011), which attempts to place the manufacturing sector on a higher growth trajectory, is a step in the right direction. However, it is important that unlike India's earlier industrial policies where the focus was to "pick winners", this policy enables states to create an ecosystem in which more winners emerge, and as they emerge, they are enabled by the ecosystem to grow stronger<sup>30</sup>.

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<sup>28</sup> The Union Cabinet cleared amendments to the Factories Act, 1948 which includes increasing the limit of overtime for workers from 50 hours per quarter to 100 hours per quarter, lifting restrictions on night shifts by women in factories and reducing the eligibility for entitlements such as annual leave with wages to 90 days from the current 240 days. It also made amendments to the Apprenticeship Act(1961), dropping the provision that called for the arrest and imprisonment of employers who did not implement this act and to the Labour Laws Act (Exemption from Furnishing Returns and Maintaining Registers by Certain Establishments) which seeks to allow firms employing up to 40 workers to file a combined compliance report for 16 labour laws, up from the current nine. Further, the Rajasthan assembly has also passed changes which reduces the applicability of the Factories Act to units with more than 20 workers with power and 40 without power (down from the existing norm of 10 and 20 workers respectively); of the Contract Labour Act(CLA) to companies with more than 50 workers (from the current 20); and of the Industrial Disputes Acts (IDA) to factories employing 300 workers (up from the current 100).

<sup>29</sup> Krueger (2007)

<sup>30</sup> Maira(2012)

## APPENDIX

### I) Sectoral Breakdown of Employment in India

Sector	Organised Sector	Unorganised Sector	Total
<b>1999-2000</b>			
Agriculture	5.47	232.2	237.6
Manufacturing	13.13	30.92	44.05
Non-Manufacturing	6.95	13.89	20.84
Services	28.57	65.62	94.2
Total	54.12	342.63	396.69
<b>2011-12</b>			
Agriculture	18.2	213.7	231.9
Manufacturing	20.7	39.1	59.8
Non-Manufacturing	22.4	33	55.2
Services	40.3	87	127.3
Total	101.6	372.7	474.3

*Source:* Data from 1999-2000 is as per Planning Commission estimates and data for 2011-12 is from Mehrotra et al (2014)

### II) Trend growth in capital intensity at the State Level (2000-01 to 2010-11)

State	Trend growth(%)
Maharashtra	3.99%
Gujarat	4.64%
Tamil Nadu	3.73%
Andhra Pradesh	5.55%
Uttar Pradesh	2.39%
Karnataka	3.96%
Uttarakhand	13.59%
Haryana	2.40%
West Bengal	3.86%
Punjab	2.52%
Jharkhand	7.97%
Himachal Pradesh	6.59%
Madhya Pradesh	1.11%
Rajasthan	2.65%
Odisha	5.27%
Chhattisgarh	2.09%
Kerala	1.87%
Assam	10.09%
Bihar	3.63%

*Source:* Calculations from ASI published statistics (several years)

### III) Employment Elasticity of Output in Labour and Skill Intensive Industries

	(4)	(5)
VARIABLES	logTPE	logTPE
Log share of industry i in VA in 98 interacted with time	-0.001 (-1.232)	-0.003*** (-2.855)
Log GVA	0.258*** (15.062)	0.350*** (23.432)
Log GVA*Log of labour intensity	0.042*** (10.990)	
logGVA*Skill dummy		0.120 (0.580)
Constant	6.445*** (143.784)	6.530*** (147.196)
Observations	9,776	9,777
R-squared	0.586	0.570
Number of panelvar	790	790

### IV) Correlation Between Different State Regulatory and Infrastructure Characteristics

	LMR	PMR	EER	Per Capita Roads	T & D Losses
LMR	1.000				
PMR	0.2291	1.000			
EER	-0.1369	0.0577	1.000		
Per Capita Roads	-0.0946	-0.8810*	-0.5031*	1.000	
T& D Losses	-0.0274	0.8412*	0.0451*	-0.8359*	1.000

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