

Where Is the Work?

Employment across Sectors, Industries and States

Almost the entire increase of manufacturing employment between 1993 and 2004 was in the unorganised sector. On the other hand, between 2004 and 2011, increase in organised employment accounted for most of the net increase in manufacturing employment.

- Thomas and Johny (2018)



The question of job creation is closely connected to the question of structural change. Aggregate employment cannot be the only focus of employment policy in a country like India, which is undergoing a transformation from an agricultural economy to an industrial economy.

We can think of structural change in terms of two interrelated processes— the Kuznets process (named after Simon Kuznets) and the Lewis process (named after Arthur Lewis). The first entails the movement of workers away from agriculture and related occupations, to manufacturing and service activities. The second involves the linked movement of the workforce from micro and small-scale informal or unorganised economic activities where labour is underemployed, to larger, formal or organised ones. This leads, eventually, to a depletion of surplus labour and rising wages. These two transitions have historically been the route towards a modern economy and sustained per-capita income and wage growth. To this traditional understanding of development, we must add important considerations of equity and sustainability.

In this chapter we primarily address the Kuznets process and assess the extent of decline in the agricultural workforce and the extent of increase in the total non-agricultural

workforce. We also ask which sectors are expanding in terms of employment, across different states, to what extent the agricultural labour force has transitioned into manufacturing, construction, or service sector occupations, and which industries have been relatively better at creating opportunities for non-agricultural employment.

3.1 / Taking Stock of the Kuznets Process

3.1.1 / 2004-2011 versus 2011-2015

Agriculture and allied activities still support 47 per cent of the labour force even though their share in GDP has fallen to 18.5 per cent. On the other hand, services account for more than 50 per cent of GDP but only 30 per cent of employment. The mismatch between share of employment and share of output across the three main sectors is a long-standing feature of the Indian economy. It points to big differences in labour productivity or the amount of value added per worker, and hence also to differences in wages and living standards across sectors. A long standing goal of economic policy has been to increase labour productivity in agriculture and ensure movement of workers away from this sector to eliminate this mismatch. However, the mismatch has persisted because the economy has not performed up to expectations on either front.

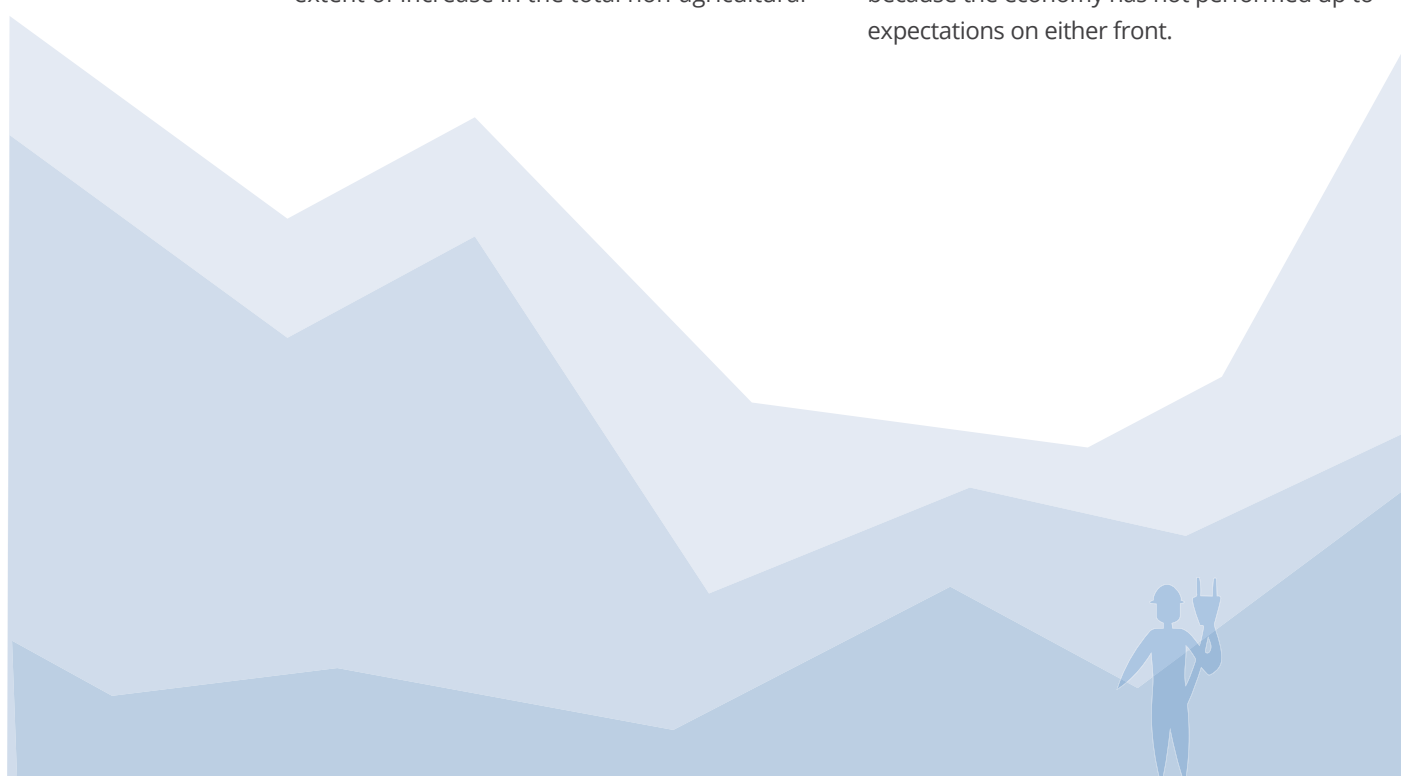
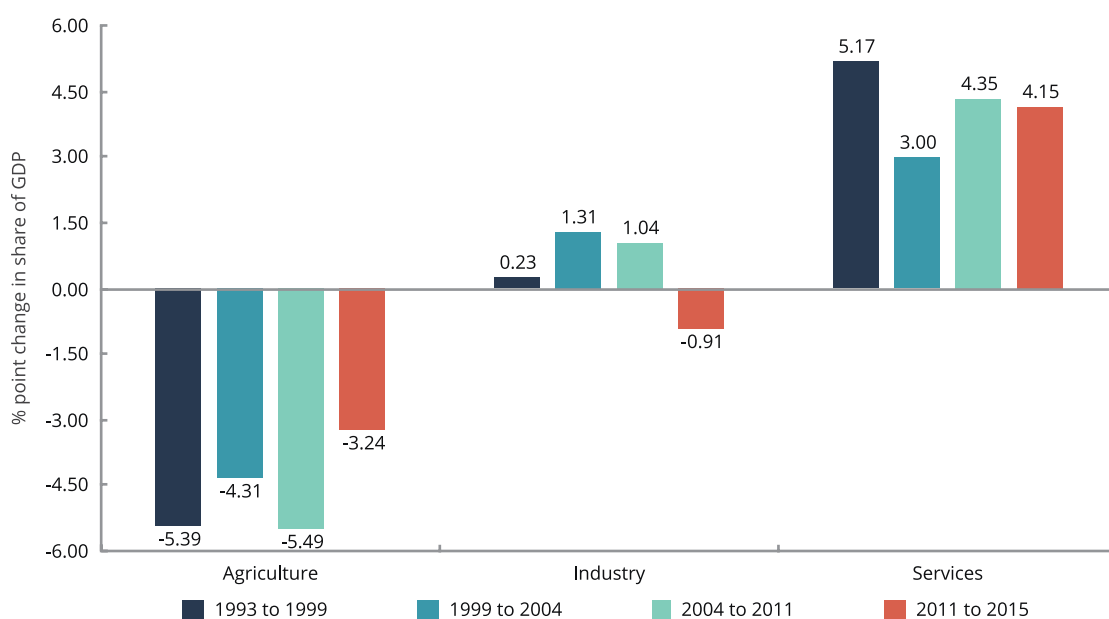


Figure 3.1 : *Structural Transformation over Two Decades*a) *Employment*b) *Gross Domestic Product*

Sources and notes: *Employment- NSS-EUS various rounds and LB-EUS 2015. GDP- Table 1.3A (for 1993-1999, 1999-2004, 2004-2011) and Table 1.3B (for 2011-2015) of Economic Survey 2016-17 Statistical Appendix.*

Since 2005 the Indian economy has embarked on a new phase. Between 2005 and 2011 the absolute number of workers in agriculture fell by 37 million.

Even though the share of the workforce engaged in agriculture and allied activities is still relatively high, it is also true that it has been steadily falling since Independence. Until 2005, the rate of decline was small enough that the absolute numbers engaged in this sector did not fall, rather there was an increase. Since 2005, the Indian economy has embarked on a new phase. Between 2005 and 2011 the

absolute number of workers in agriculture fell by 37 million. This corresponds to a large fall in the share of agriculture in total employment in this period (Figure 3.1).

While this was generally welcomed as a sign of structural change picking up pace, it should be noted that the Census of India and the National Sample Survey (NSS) give differing accounts in

this matter. The number quoted above is from the NSS. According to the Census, the number of workers in agriculture actually increased during this period. It is possible that this discrepancy arises from classification errors due to extensive overlap between agricultural workers and construction workers (see Box 3.1).

As per the Labour Bureau's Employment-Unemployment Survey (LB-EUS), which follows the NSS approach, the number of workers in

agriculture has continued to fall and it fell by 10 million between 2011 and 2015, the most recent year for which data are available. But this is a much smaller drop than in the previous period. In general the degree of structural change is smaller in this period than in the preceding one. Part of the explanation may lie in the unprecedented high rate of agricultural wage growth between 2010 and 2014 (see Chapter Four).

Box 3.1 / Did India's Agricultural Workforce Really Decline between 2005 and 2012?

A discrepancy has been observed between the Census of India and the NSS as regards the change in the number of workers in the agricultural sector between 2000-2001 and 2011-2012. While the NSS data registered a decline, the Census data showed that the population engaged in agriculture increased. For example in Bihar, NSS data show a decline of 2.4 million workers while the census data show an increase of 5.4 million.

This may be because the Census and the NSS have slightly differing definitions of who is a worker. The Census categories of 'main' and 'marginal' worker are similar, but not identical, to the NSS categories of 'principal status' and 'subsidiary status.' A main worker is someone who works for at least six months of the year, while a person is considered to work in principal status if he or she worked for a 'relatively large' part of the year.

Due to this ambiguity and due to an increase in the incidence of multiple occupations, particularly farming and construction, among the rural poor, it is possible that the same workers could have been classified as agricultural workers in the Census and construction workers in the NSS. Relatedly, the authors note that the states with the largest discrepancies are states such as Bihar and Jharkhand, who also have a high rate of migration. Male migrants from Uttar Pradesh, Bihar, Rajasthan, and Odisha who migrated in search of employment numbered 8.2 million, 4.5 million, 2.5 million, and 1.8 million respectively in 2008. Many such migrants are construction workers for a few months of the year and are engaged in agriculture during the peak seasons. Thus, it is possible that the discrepancies between the Census and the NSS were a result of this fluidity in occupations. Of course, this is only a hypothesis in need of further investigation.

Sources and notes: *Thomas and Jayesh (2016)*



Another well-known aspect of India's experience is clear in Figure 3.1b. The falling share of agriculture in output has largely been compensated by a rise in the share of services. The secondary sector (Industry) has failed to increase its share substantially.

Workers looking for jobs in the non-agricultural economy come from three distinct sources. First, those who are leaving agriculture to look for work elsewhere; second, those who are entering the labour force for the first time; and third, those who are outside the labour force, but are not in education, and would be willing to work if work was available. The third group consists primarily of women engaged in unpaid care and subsistence activities.

Assuming that the entire working age population apart from those in educational institutions may be available for work, Thomas (2014) has calculated that India's 'potential workforce' in industry and services grew by 14.7 million a year between 2004 and 2011. This consists of 10.3 million new workers (additions to the working age population annually minus those in schools and colleges) and 4.4 million who left agriculture.

Was the economy able to create enough non-agricultural jobs to accommodate these workers? The answer is no. During that same period, employment was created in the non-agricultural sector at the rate of 6.5 million a year. Thomas argues that this mismatch between the supply of potential workers and demand for them is the reason women, in particular, have been discouraged from entering the labour market.

As discussed in the previous chapter, the labour force participation rate for women is comparatively low in India and has been falling. Secondary data alone do not allow us to address the reasons for this because it does not distinguish sufficiently between women who are not in paid employment because of

social restrictions or disproportionate burden of unpaid work, or because paid work is not available in sufficient quantity. Field studies are needed to address this question. The SWI background study by Talwar et al (2018) points to insufficient work as an important reason (see Chapter Five).

However, if we leave the third group of potential workers aside, and only consider new additions to the labour force and workers leaving agriculture, then we find that there was a close match between this number on the supply side and increase in the non-agricultural employment on the demand side. Agricultural employment decreased by 37 million, and 14 million new workers were added to the labour force between 2004 and 2011. The workforce in the non-agricultural sector increased by 52 million in the same period. Of course, a large part of this is accounted for by the construction sector: a point we return to later in the chapter.

The situation looks very different in the past few years. Between 2011 and 2015, while the number of those leaving agriculture was 12.6 million and the labour force increased by 14 million, total employment in the economy (all sectors) increased only by 12 million (all numbers as per principal and subsidiary status). This clearly indicates an inability to create non-farm employment in the required numbers. An indicator of this crisis of employment in the non-farm sector is that the number of youth in agriculture, that had fallen between 2004 and 2011 — from 87 to 61 million — has increased again to 85 million after 2011 (Mehrotra 2018). The fact that total employment in agriculture fell while the number of youth increased, means that it is mostly older workers who left agriculture to take up other work. It is possible that this has occurred because youth are reluctant to take up menial work. Taken together with rising levels of formal education and rising aspirations for non-agricultural work, this points to a serious problem in the immediate future.

Between 2011 and 2015 while the number of those leaving agriculture was 12.6 million, and the labour force increased by 14 million, total employment in the economy increased only by 12 million.



3.1.2 / From Agriculture to Construction

The second major concern as regards the transition from agriculture to the non-agricultural economy is that the sector that has proved most effective in creating employment is neither manufacturing, nor services, but rather construction. Between 2004 and 2011, while the share of manufacturing in total employment increased marginally from 11.7 to 12.6 per cent, and that of services from 23.4 to 26.8 per cent, the 'non-manufacturing' section which consists of construction and utilities increased its share from 6.4 per cent to 11.7 per cent. Today, construction employs almost as many workers as the entire manufacturing sector — around 50 million. But unlike manufacturing, it affords seasonal and non-steady employment.

In fact, both in employment as well as output terms, the rise of construction has been spectacular. Growth rate of output in this sector was around 4 per cent in the 1970s and 1990s. Between 1993 and 2004 it shot up to 8 per cent and reached 11.5 per cent between 2004 and 2011. As a result of this increased growth, as well as a high employment elasticity of output (that is, and large proportionate increase in employment with an increase in output), employment in construction sector increased 13 times during the past four decades. Its share in rural employment has gone from 1.4 per cent in 1972 to 10.7 per cent in 2011 (Mehrotra 2018). It is the largest rural employer after agriculture.

However, there was a considerable slowdown in employment growth in this sector after 2011. This is an important reason behind the general slow growth of employment in the non-agricultural sector during this period, that we have commented on previously.

The most recent data from the Central Statistical Organisation for the first quarter of 2018 indicate a revival of growth in this sector as well as in manufacturing. The employment effects are expected to be positive but job data are not yet available at the time of writing this report.

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3.1.3 / The Continued Importance of Agriculture

It cannot be emphasised enough that in the short to medium-run, the single largest employer in India will continue to be agriculture. With this in mind, the current government had made a promise to double farm incomes by 2022. This calls for increased public support in the form of infrastructure and extension services as well as implementation of other recommendations of the National Commission on Farmers (Swaminathan 2006). The large-scale protests by farmers in 2017-2018 as well as the continued electoral potency of farm-loan waivers, and the Minimum Support Price issue point to importance as well as the urgency of raising farm incomes.

The crisis in agriculture manifesting ultimately in the tragic phenomenon of farm suicides, is very well-documented. Its principal causes are also well-known and have been known for years: ever decreasing size of holdings, predictably rising costs of production, unpredictable output prices, political economy of the value chain, and a woeful lack of public investment. Further, it appears that Indian agriculture has now entered an era of surpluses, which has brought its own share of problems including periodic glut and collapsing incomes.

In the early 1990s public investment in agriculture was around 3.8 per cent of GDP. Since then it has steadily fallen. The 2005-06 budget noted that it had fallen from 2.2 per cent in the late 1990s to 1.7 per cent in 2004-05. While the share in GDP has gone up from its 2005 low, it is still well below the level reached in the early 1990s.

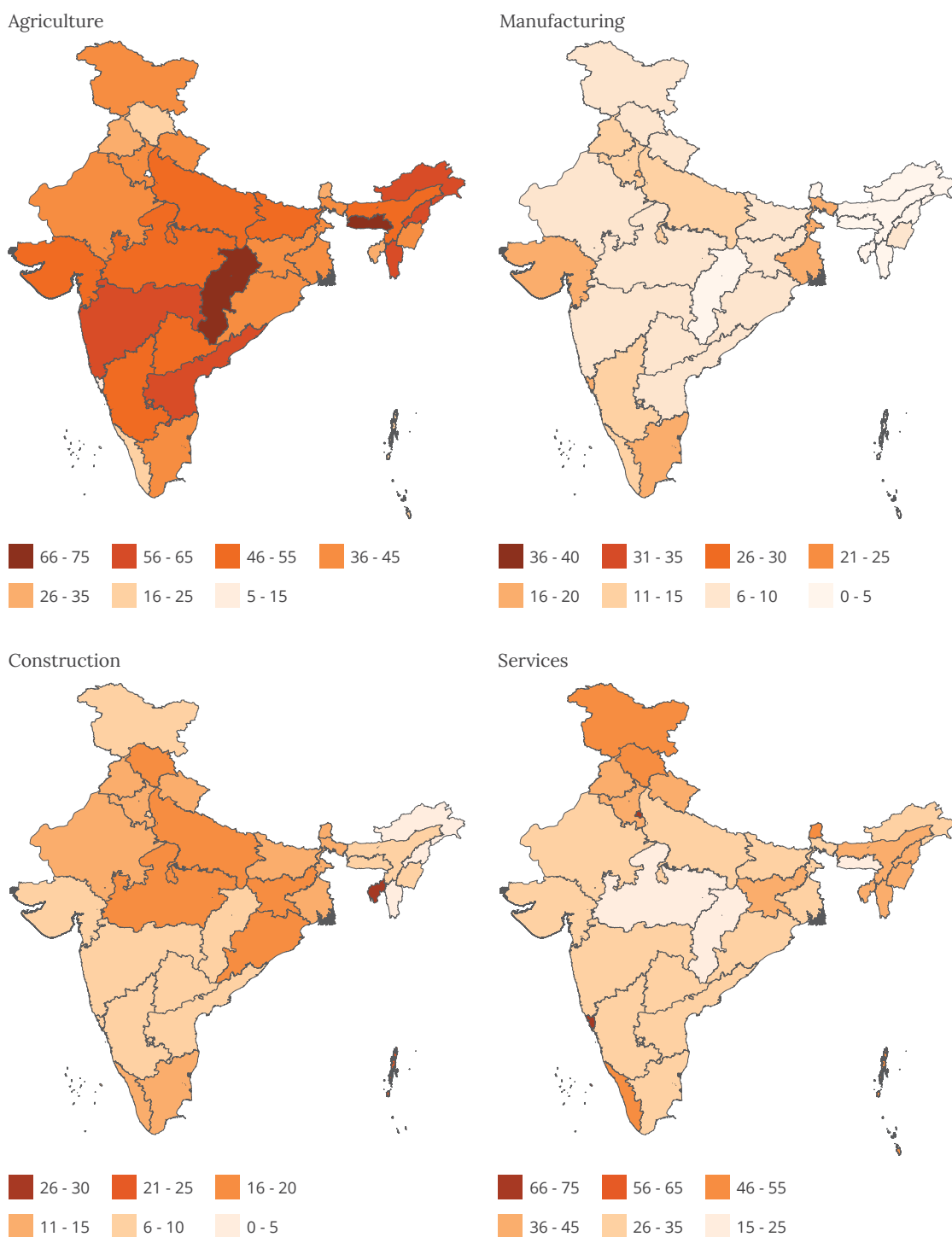
Given the extensive Swaminathan Commission report as well as many other studies, our problem is not lack of knowledge on what needs to be done to revive the rural economy. The really important issue is reimagining agriculture as a sector that can create remunerative, environmental-friendly jobs. This has two parts to it. One is the movement of part of the agricultural workforce to other sectors. The other equally important leg of the two-legged approach is better public support to this sector. We return to this issue in the concluding chapter of the report.

3.2 / State-Level Structural Change

Indian states differ vastly in their experiences of structural change. Figure 3.2 shows the share of a state's workforce (by principal status) in four major sectors: agriculture, manufacturing, construction, and services. Note that the scale on each map is different since shares differ widely across sectors.

While the general picture is perhaps an expected one, there are some surprises also. For example, Punjab, often thought of as a primarily agricultural state has a smaller proportion of its workforce in agriculture than any other state in north and central India. With respect to manufacturing, the presence of West Bengal in the same category as Gujarat and Tamil Nadu may come as a surprise. The explanation is that West Bengal has a large

Figure 3.2 : Share of the Workforce in Various Sectors across States



Sources and notes: LB-EUS 2015. Scale indicates per cent share. See Appendix Table A3.1 online for data.

unorganised manufacturing sector. Kerala, Jammu and Kashmir, Himachal Pradesh, and Goa are leaders in service sector employment. Finally, major states like Maharashtra, Madhya Pradesh, Andhra Pradesh, and Bihar as well as several of the smaller north-eastern states still report the majority of the workforce in agriculture, bringing to fore the urgency in policy interventions that raise incomes in this sector.

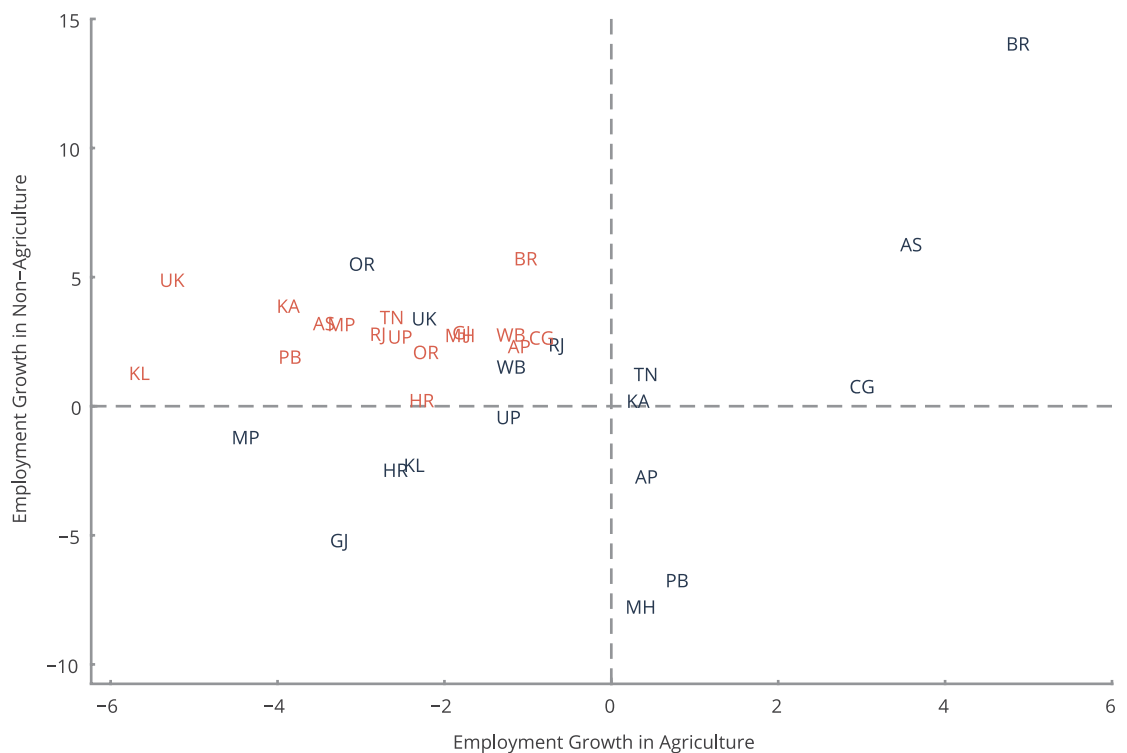
Interestingly, there is large variation in the construction share of the workforce also, indicating that the rise of construction is not a national story. In Maharashtra, only around 5 per cent of the workforce reports construction as the principal activity while the figure is closer to 20 per cent in Odisha, Bihar, UP, MP, Kerala and Rajasthan.

The maps communicate the sense that different states are likely to be very different in terms of the level of diversification of the workforce across the four sectors. In order

to understand how effective the process of structural change has been across states, we need to examine the changes in the pattern of employment over the past decade. Recall that at the national level, the period between 2011 and 2015 was one of much weaker employment generation in the non-agricultural sector compared to the previous period. Hence, we break the period from 2004 to 2015 into two periods, determined by survey availability, 2004 to 2011 and 2011 to 2015.

We calculate the compounded annual growth rate (CAGR) of employment in agriculture and in non-agriculture for the two periods, across all states. Figure 3.3 shows this data as a scatter plot with the CAGR for agricultural employment on the x-axis and the CAGR for non-agricultural employment on the y-axis. Data for the 2004-2011 period are in red and those for the 2011-2015 period are in blue. Only the large states are shown since small states post very large growth rates due to small base effects.

Figure 3.3 : **Expected Movement of Workers Away from Agriculture Was Seen across All States between 2004 and 2011 (Red) but Not between 2011 and 2015 (Black)**



Sources and notes: NSS-EUS 2004, 2011, LB-EUS 2015. 2004 to 2011 in red and 2011 to 2015 in black. Growth rate is calculated as the compounded annual rate of growth. Refer the list of state codes. Union Territories have been excluded.

Notice that in the first period all the states are in the top left quadrant, that is, they experienced a decline in agricultural employment and an increase in non-agricultural employment. In the second period there is much greater variation. Some states such as Madhya Pradesh, Gujarat, Haryana and Kerala have seen large decreases in both agricultural and non-agricultural workforces. At the other extreme Bihar and Assam saw an increase in both. But the most worrying states are ones that saw large declines in non-agricultural workforce and small increases in agriculture, such as Punjab, Maharashtra, and Andhra Pradesh.

Thus it appears that the period from 2004 to 2011 was much better from the point of view of aggregate employment as well as structural change than the period from 2011 to 2015. As mentioned earlier, the latter period also saw higher than average growth of agricultural wages. This, together with a slow-down in the construction sector may have been responsible for a reduced movement of workers away from agriculture.

3.3 / Employment Performance of the Manufacturing Sector

We now turn to a more detailed analysis of the manufacturing sector, with special attention to its employment creation capacity.

Two questions are important with respect to the industry-profile of employment in India. First, which are the industries that account for most of the employment. And second, which industries have been the loci of rapid job creation in the recent past. This data needs to be interpreted in the context of productivity in the different industries. Ideally, one should see productivity gains alongside employment gains, combined with the sharing of productivity gains

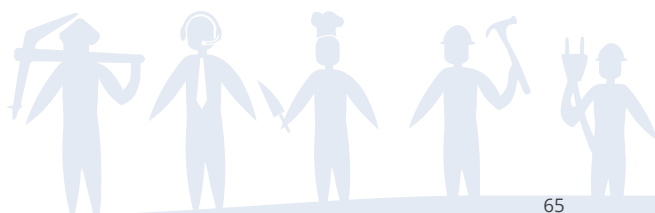
in the form of rising wages. This will lead to rapid increases in employment as well as wages and output.

Industries which generate high and inclusive growth patterns in most countries tend to be those that achieve high levels of productivity and which expand the use of inputs in tandem. In historical examples of successful industrialisation led by export growth, these inputs have also reflected the comparative advantage of the country. When this has not been the case, employment expansion has instead been in sectors with low productivity, while rapid GDP growth has occurred in industries with a low employment elasticity.

Based on several recent studies, cited below in context, the following stylised facts can be highlighted in the Indian manufacturing sector: rising capital intensity of production across all industries, low output elasticity of employment (around 0.5 or less), growing divergence between real wages and labour productivity, falling labour share of income, and rising proportion of contract workers. Strikingly, the first four features are to be found in the organised as well as the unorganised sectors. The first two have implications for the quantity of employment and we discuss them here. The other issues are discussed in Chapter Four.

The most salient point to note, from an employment perspective, is that this sector has failed to expand its employment share significantly over the past twenty-five years, remaining in the range of 10-13 per cent of the workforce. This is low compared to other developing countries with similar levels of per capita income (Ghose 2016). This poor performance has been attributed to distortions in labour, capital and land markets, poor infrastructure, and inappropriate specialization away toward skill intensive activities that do not generate jobs commensurate with the nature of the labour force (Amirapu and Subramanian 2015).

The period from 2004 to 2011 was much better from the point of view of aggregate employment as well as structural change than the period from 2011 to 2015.



3.3.1 / A New Trend: Rapid Rise in Share of Organised Employment

As with the rest of the economy, the manufacturing sector is also typically divided into organised and unorganised components. Organised manufacturing consists of those establishments that are large enough to be registered under the Factories Act (1947). These are typically establishments that employ 10 or more workers with electricity, or 20 or more workers without electricity, as per the official definition. The unorganised subsector is simply the residual sector consisting of establishments that are not registered under the Factories Act.

The related distinction between 'formal' and 'informal' employment (as opposed to enterprises) is used to distinguish between workers whose jobs are subject to labour regulation alongside access to job security versus those who have no such access. We discuss these distinctions in greater detail in Chapter Four.

Traditionally, it is the organised or factory sector that has been considered the engine of structural change, driving both the Kuznets and the Lewis processes by creating mass employment in large firms. The conventional wisdom in India, until around a decade ago was that this sector was mostly stagnant in terms of employment. Whatever manufacturing jobs were being created, were in the unorganised sector. Thomas and Johny (2018) note that total manufacturing employment in India (according to NSS household surveys) increased by 23 million (from 32.2 million to 55.2 million) between 1983 and 2004. But organised sector employment was mostly stagnant in this period.

The pattern of employment growth from the mid-2000s onwards has been very different from the pattern observed during the 1980s and 1990s. It is the organised component that has been increasing sharply even as share

of the unorganised sector employment has shrunk. Enterprise level surveys from NSS and factory level data from ASI reveal that between 2011 and 2015, both unorganised and organised manufacturing employment has grown by around 1 to 1.5 million each (from 35 to 36 million and from 12.2 to 13.7 million respectively). As a result, the share of the organised sector in total manufacturing employment, which was stagnant at around 18 per cent had shot up to 27.5 per cent by 2015.

Household surveys also show similar trends albeit with differences in the absolute numbers, a phenomenon that we comment on later (see Table 2 and Figure 1 of Thomas and Johny (2018)). Before we take this as a measure of success for the Lewis process, note that the new jobs were not necessarily formal jobs. This was a period of rising contract work in manufacturing (see Chapter Four).

Increasing employment in the organised sector does have implications for employment in the unorganised sector as well because the two are connected to each other via subcontracting relationships. Typically, larger factories outsource jobs to smaller workshops. Across states, the aggregate data show a positive relationship between factory employment as recorded in ASI and unorganised manufacturing employment as recorded in the NSS enterprise surveys. Figure 3.4 shows a scatter plot of the relationship between share of the organised sector and the share of the unorganised sector in total non-agricultural employment in 2015. The positive relation, which is statistically significant, shows that states with a larger organised sector also tend to have a larger unorganised sector. This relationship can be beneficial to the unorganised sector if it creates jobs and upgrades technology. However, it may also result in 'sweatshop' conditions and pressure on smaller units to compete for jobs by depressing wages (Basole, Basu, and Bhattacharya 2015).

The pattern of employment growth in manufacturing from the mid-2000s onwards has been very different from the pattern observed during the 1980s and 1990s.

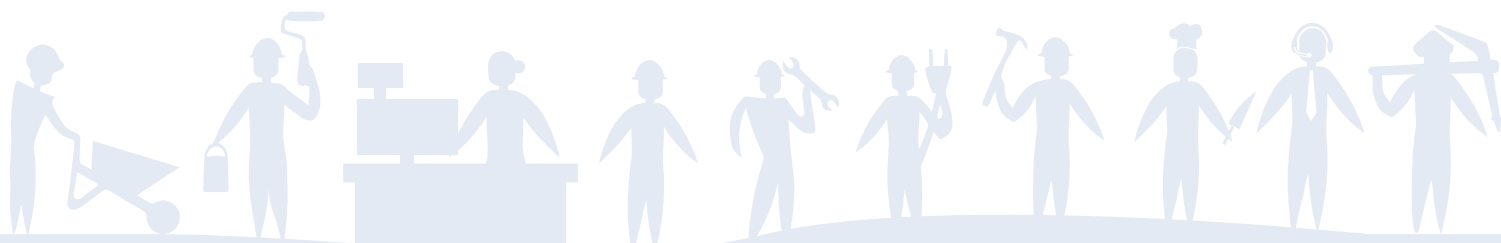
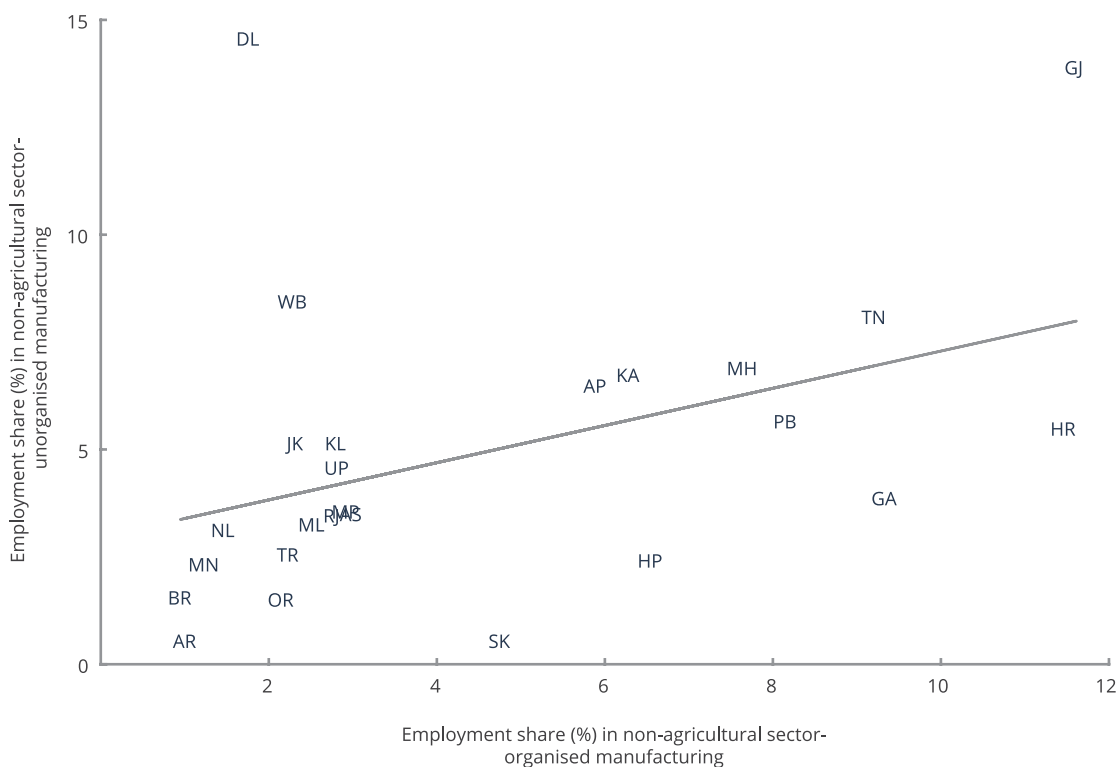


Figure 3.4: States with a Large Organised Manufacturing Sector Tend to Have a Larger Unorganised Manufacturing Sector



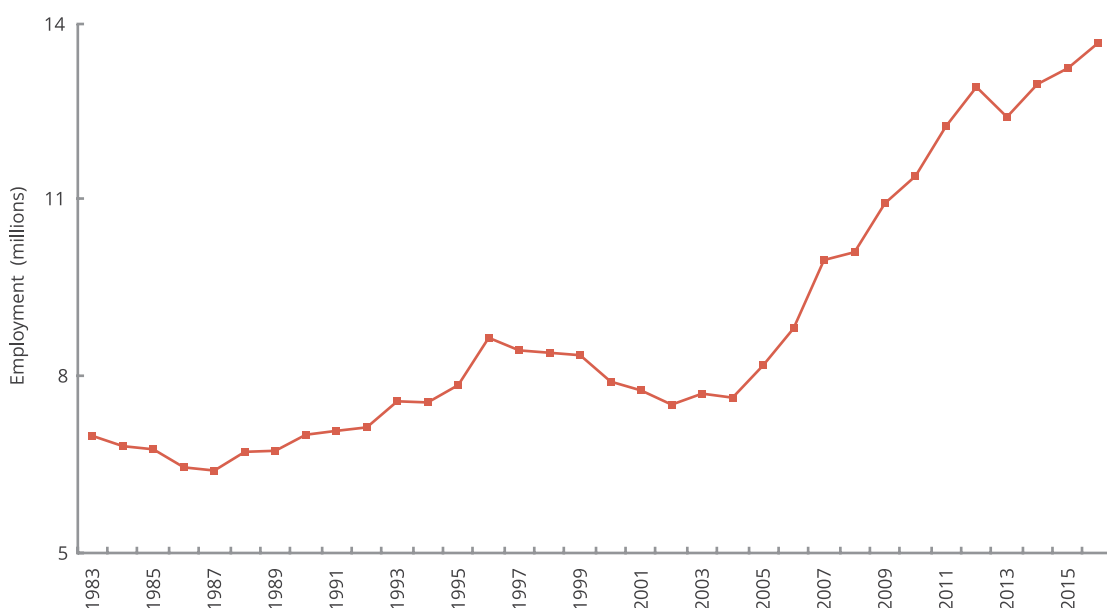
Sources and notes: NSS Unincorporated Non-Agricultural Enterprises Survey 2015, ASI Principal Characteristics 2015. Refer list of state codes. Union Territories have been excluded.

The departures from the average trend in Figure 3.4 are also of interest. For example, Odisha and Delhi have the same share of factory employment (2 per cent) but Delhi has a much higher share of unorganised employment in manufacturing. Similarly, Gujarat is also an outlier in having a larger than expected share of unorganised manufacturing. Sikkim and Himachal Pradesh, on the other hand have a larger organised share than unorganised. This is perhaps expected, given the substantial

presence of large pharmaceutical, food and beverage processing units in those states.

We now analyse the trends in organised manufacturing more closely. Figure 3.5 shows the trend in total factory employment, including production workers, supervisors, managers, administrative workers, and working proprietors, over a 33-year period between 1982 and 2016.



Figure 3.5 : *Employment in Organised Manufacturing Has Increased Rapidly in the Last Decade*

Sources and notes: ASI NIC-2 digit (EPWRFITS) various years. All employees including supervisory, managerial and administrative staff as well as working proprietors have been counted.

It is clear that the experience or performance of the organised manufacturing sector over the last three decades is not homogeneous. Neither can it be cleanly divided into pre-reform and post-reform experience (if 1991 is taken as the reference year for reforms). Rather the analysis of aggregate trends reveals three distinct sub-periods in the entire period from 1983 to 2016. The first period till 1996 is characterised by positive employment growth (albeit weak), the second period (1996 to 2006) displays negative growth and the third period (2006 to 2016) shows strong employment generation.

What factors may be relevant in explaining these differences? Here we can only offer some initial speculative remarks that need to be investigated further (see Basole and Narayan (2018) for a more detailed discussion). It is true that the early 1980s was a period of declining employment and the subsequent increase in jobs was weak, leading to the earliest discussion on 'jobless growth' (Nagaraj 2000). However, the transition that took place in the mid-1990s is much larger. This decline in employment is not an artefact of the coverage

changes in ASI around this time. Our analysis excludes the industries that were dropped from coverage and even industries such as apparel, that show strong employment growth over the entire period, stagnated during this period. So far as we know, there is no satisfactory explanation for this decline in the literature.

Rani and Unni (2004) analysed output and employment trends in three sub-periods from 1984-85 to 1999-2000, namely 1984-85 to 1989-90, 1989-90 to 1994-95 and 1994-95 to 1999-2000. They find employment growth to be small but positive in the final period. The authors attribute weak employment growth in this period to labour law reforms that allowed firms with more than 100 workers to retrench more easily and to public sector downsizing. They also note that by the mid-1990s import tariffs had been reduced in most industries including consumer goods. Vashisht (2016) also discusses the gradually increasing nature of trade liberalization in the 1990s, and notes that the manufacturing sector downturn became more pronounced when quotas on imported consumer goods were removed.

The average annual elasticity of employment for the period from 1983 to 2016, excluding two years of exceptionally low elasticity was 0.1.

The increase in job creation that started in 2005-06 has also been widely noted in the literature. It is possible that relaxation of labour laws over the 1990s and early 2000s resulted in a shift away from subcontracting work to small firms in the unorganised sector to production in-house with contract workers. It should also be noted that the growth in employment pales in significance when compared to the rise in output in the same period, indicating a large increase in labour productivity. Basole and Narayan (2018) show that while employment roughly doubled in this period, output went up nearly 15 times. Thus the growth elasticity of employment, or per cent increase in employment for every per cent increase in output, has been low in this sector. The average annual elasticity over the entire period from 1983 to 2016, excluding two years of exceptionally low elasticity (2001, elasticity -5 and 2013, elasticity -10) was 0.1.

Finally, it is possible that incentives to hide workers have reduced and more factories are reporting accurate data on number of workers. This explanation would suggest that it is not more employment but only more visible employment that lies behind the trends.

3.3.2 / Analysing an Old Trend: Falling Labour Intensity

As is well-known, labour intensity, or the number of workers employed per rupee of

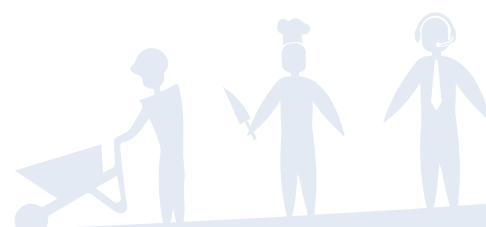
capital invested in production, has been falling steadily in Indian manufacturing over the past few decades. Moreover, this trend is observed in the unorganised sector as well, even in very small firms, such as those operated by a single worker or a family. Table 3.1 shows the number of jobs created per one crore rupees of fixed capital invested in the unorganised sector and in the factory or organised sector. Family-based enterprises tend to be the most labour intensive, followed by own-account enterprises (OAEs). This is consistent with the view that employment in such businesses is a form of income sharing, and that hiring decisions are not based on considerations of profitability. Establishments, that is, small firms that hire a few wage workers each, tend to be the least labour intensive in the unorganised sector. Once again, this is expected. However, it is worth noting that the factory sector differs substantially from the unorganised sector as a whole and is around 20 times more capital-intensive than the establishment sector.

Of course, the biggest takeaway from these data is the sharp decline in labour intensity regardless of firm type. In fact, the largest percentage decline is observed in the family enterprise sector, where labour capital ratio for 2016 is a mere 15 per cent of the ratio in 1995. This is followed by the factory sector (24 per cent), the establishment sector (28 per cent) and finally the OAE sector (42 per cent).

Table 3.1 : *Workers per One Crore Invested Capital in Unorganised and Organised Manufacturing*

Year	OAE	Family Enterprises	Establishments	Factory
1994	1559	4615	877	33
1999	1525	2157	679	16
2005	1784	2320	544	16
2010	968	1073	382	11
2015	656	702	248	8

Sources and notes: NSS informal and unincorporated enterprise surveys, various rounds (see Methods for details), ASI various years. OAE – own-account enterprise. Fixed capital has been deflated by WPI for machines and machinery (base 2015).

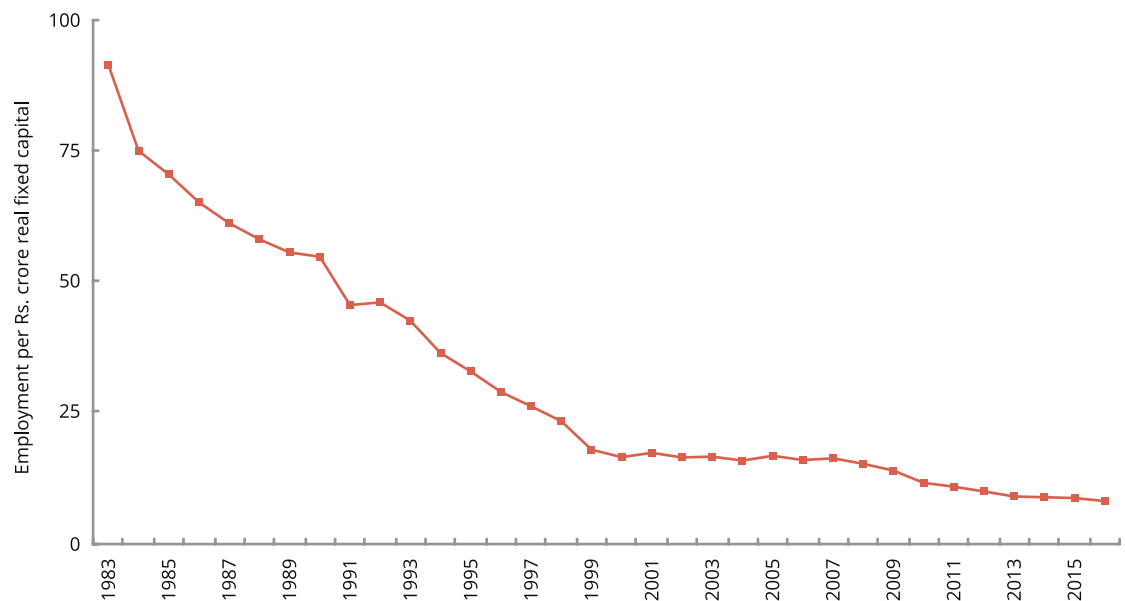


In case of the factory sector, the ASI data offer a high frequency annual series to examine the trends in labour intensity. We see that this sector has experienced a secular fall in the labour capital ratio from around 90 workers per one crore of investment (2015

rupees) in 1983 to 8 workers in 2016 (Figure 3.6). A rapid decline in the 1980s and 1990s is followed by a slower decline in the 2000s. It is possible that a 'floor' of sorts has been reached in the substitution of capital for labour at the aggregate level.

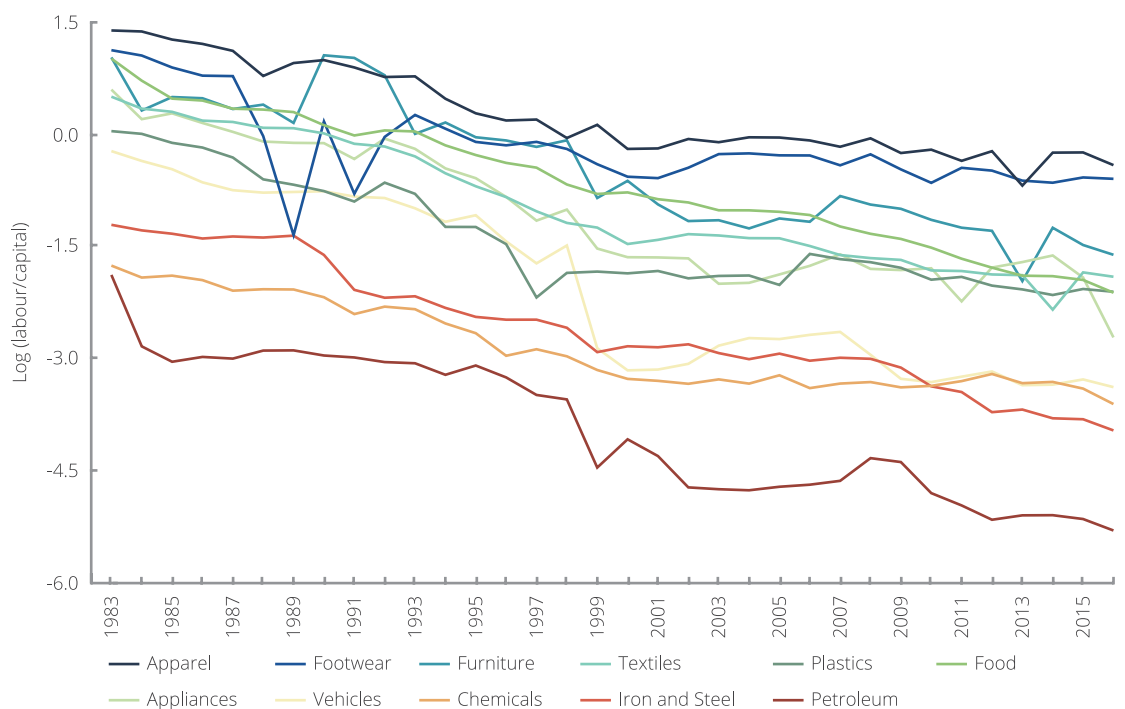
Figure 3.6 : *The Labour-Capital Ratio Has Fallen Continuously in Organised Manufacturing*

a) *All Industries*



Sources and notes: ASI NIC 2 digit (EPWRFITS) various years. Labour-capital ratio = Number of employees / Real fixed capital.

b) *Selected Industries*



Sources and notes: ASI NIC 2-digit (EPWRFITS), various years. Labour-capital ratio has been log transformed to display trends across industries with different initial values.

The decline in labour intensity at the aggregate level can be due to a decline within each industry. But it can also be a result of relatively more rapid output growth in more capital intensive industries. The latter mechanism is suggested by both Kannan and Raveendran (2009) and ILO (2009) as a mechanism for jobless growth. The argument is that rising inequality results in greater demand for manufactured commodities that are products of relatively more capital-intensive as well as more import-intensive industries. These include metal and chemicals-based products, electronics, or vehicles. The resulting growth of such industries causes a shift in the aggregate capital-labour ratio. Of course, the two mechanisms are not mutually exclusive and both may occur at the same time.

Several studies indicate that the first mechanism is the dominant one. For one, the capital labour ratio has increased in capital intensive as well as labour intensive industries (Kapoor 2015; Sen and Das 2015). Figure 3.7b shows the decline in the labour-capital ratio for a range of labour and capital intensive industries. Basole and Narayan (2018) perform a shift-share decomposition analysis that separates the falling labour capital ratio into two components: fall in the ratio within an industry (at 3-digit level of the National Industrial Classification or NIC) and relatively faster growth of less labour intensive industries. They find that the within-industry component dominates for almost every year in the sample. This means that the decline in labour intensity at the aggregate level is due to its falling within each industry rather than due to faster growth of more capital intensive industries.

As with the analysis of falling labour intensity across the unorganised and organised sectors, this global fall points to macroeconomic changes that have created incentives to mechanise across industries and sectors.

3.3.3 / Labour Law Debate: Missing Firms or Missing Workers?

The question of employment in the manufacturing sector has been dominated by the long-standing debate over whether India has an overly restrictive labour law regime that incentivises firms to substitute workers with machines and thereby impedes job creation. The argument is that costs of compliance with labour laws create incentives for firms to adopt machines instead of workers, or to refrain from expanding and hiring workers in order to stay below the relevant threshold where a particular set of legislation starts applying. Thus rising capital intensity as well as the preponderance of small firms is often attributed to inflexibility in labour laws that raise the costs of hiring and firing labour. The result is a large number of very small firms at one end, followed by large firms at the other end with the least density of firms in the middle, where labour laws start to apply. This 'missing middle' has become a widely accepted stylised fact of Indian manufacturing.

Just over 50 per cent of firms in the organised manufacturing sector have 20 workers or less as per ASI data. Since large firms (>300 workers) pay 76 per cent higher wages than small firms (10-19 workers) the size distribution has welfare implications. On the other hand, small firms are commonly considered to be engines of job creation. But contrary to the view that small firms create more jobs per rupee invested than large firms, Kapoor (2018) finds that it is relatively new firms that create jobs. To the extent that new firms tend to be small, an age effect appears as a size effect. Older small firms do not create more jobs than older large firms. This finding forms a case for setting up larger firms rather than banking on firm growth.



Labour laws may be strict on paper but the reality is widespread avoidance or evasion of factory registration as well as under-reporting of number of workers employed.

Indeed, the dominance of small firms in the ASI data indicates that the transition from a small to a medium to a large enterprise is difficult. Or that firms choose to remain small due to inbuilt incentive to remain undersized. Thus, understanding what holds back Indian enterprises of different size groups from expanding is critical insofar as the goal of generating better paying jobs is concerned.

But are Indian firms really that small and is this because of labour legislation? A counter-point comes from internationally comparable firm surveys such as the World Bank Enterprise Survey. The survey shows that while the average Indian firm is indeed much smaller than an average firm in Bangladesh, India is not an outlier when compared to other developing countries. This is true for both the number of workers per firm and the proportion of employers that cite labour legislation as a problem (Table 3.2).

Table 3.2 : *Average Firm Size and Percentage of Firms Citing Labour Regulations As a Problem across Developing Countries*

Economy	Workers per firm	Firms citing labour regulations as problem (%)
Bangladesh (2013)	184.9	3.4
Brazil (2009)	37.4	63.2
China (2012)	62.7	1.2
India (2014)	52.4	11.2
Indonesia (2015)	21.6	9.9
Kenya (2013)	48.7	20.8
Nigeria (2014)	16.3	3.4
Pakistan (2013)	85.8	12.9
South Africa (2007)	51	5.9
Sri Lanka (2011)	36.6	12.7

Sources and notes: *World Bank Enterprise Surveys, various years.*

Further, as Sen and Das (2015) point out, the level of labour intensity can be accounted for by labour regulations but they cannot account for falling labour intensity. For this, laws would have to become more pro-labour over time, which has not happened.

Nagaraj (2018) raises the issue of compliance and implementation. He notes that laws may be strict on paper but the reality is widespread avoidance or evasion of factory registration as well as under-reporting of number of workers employed. For example, in 1981, as per Economic Census, 52 per cent of factories employing 10 or more workers that legally came under the purview of the Factories Act were not registered under the act (Nagaraj 1999). The ratio went up to 57 per cent in 1991, and to 66 per cent in 2013. Thus the proportion of firms that avoid getting registered under the Factories Act has increased over time and smaller firms tend to be more prevalent among these (Nagaraj 2018).

There are two related issues here with implications for the quality of data on firm size and inferences drawn from there. First, firms with more than 10 workers who should register do not do so. So they do not appear in the ASI database since appearance in the sample frame is contingent on registration. Second, those firms that have more workers than a particular threshold number (such as 10, 20 or 100) understate their size or hire workers off the books. So real size may be substantially higher than reported size and actual employment higher than employment observed in the data. Field studies as well as anecdotal evidence support this hypothesis. In other words, it is not firms that may be missing so much as workers.

One important distinction should be made here, that between plant or factory size and firm size. The ASI data reports the former and not the latter. This distinction is important because it is possible that a firm will choose to grow 'horizontally' by setting up a number of small factories rather than a large factory, to avoid legislative compliance. This is because

laws are based mostly on factory size and not firm size. The issue is more important in the case of industries where the production technology does not display large increasing returns to scale, for example, garments and textiles.

If it is indeed the case that there are missing workers in manufacturing, then a comparison of household-based employment surveys with establishment surveys should reveal a higher number of workers in the former than the latter. The assumption is that unlike employers, workers would have no incentive to lie about being employed. Table 3.3 shows total employment in the manufacturing sector (in millions) as well as employment disaggregated by organised and unorganised sectors from household (NSS-EUS) as well as enterprise (NSS and ASI) data. As can be seen, estimates of employment derived from the household survey are much higher than from the enterprise survey. Further, this difference arises mainly from the organised segment. The organised sector accounted for 75 per cent of the undercounting in 2006 and 67 per cent in 2012 suggesting that 'missing workers' may be more of an organised sector problem.

It is possible that the phenomenon of 'missing workers' can partly be explained by the fact that a given position in an enterprise may be occupied by more than one worker over a period of time, resulting in more workers than jobs. However, it is more likely due to the underreporting of workers on part of firms.

Another well-known way in which firms have adapted to the labour law regime has been to expand employment in categories other than that of permanent workers, that is, categories

to whom labour laws do not apply (see Box 3.2). For example, the share of contract workers has increased sharply during the same period that factory employment expanded rapidly. It now stands at close to 30 per cent. Contract workers accounted for 44 per cent of the additional employment between 2000 and 2014. Firms use non-permanent workers to stay below the threshold size and thereby avoid costs attributed to larger firm size. The intensity in the use of contract workers is highest for firms in the 50-99 size group (Ramaswamy 2013). We take up the implications of this for quality of work in Chapter Four.

Two SWI background papers take a close look at labour regimes in Indian manufacturing. Thomas and Johny (2018) examine the garment industry in Bangalore, while Amit and Nayanjyoti (2018) undertake extensive fieldwork on labour relations in the Gurgaon-Manesar industrial belt.

Karnataka has the highest number of factory employees in the garment industry among all Indian states. Within Karnataka, the largest concentration of garment factories is in Bangalore Urban District, with an employment of almost 400,000 workers employed in the formal sector. There were 750 garment factories in Bangalore's urban and rural districts combined in 2015-16. The number of workers per factory ranges from 10 (the smallest as per the requirements to register a factory) to 9500. Garment factories in Karnataka are larger compared to the rest of India with respect to the size of employment. In 2014-15, the average number of workers per garment factory was 471 in Karnataka compared to national average of only 112.

Table 3.3 : *Comparison of Employment in Manufacturing Estimated from Household and Firm Surveys*

Year	Household			Enterprise		
	Total	Organised	Unorganised	Total	Organised	Unorganised
2004/2005	47.7	14.9	32.7	45.2	8.8	36.4
2010/2011	54.3	19.1	35.2	47.1	12.2	34.9

Sources and notes: NSS EUS, Enterprise Surveys, various years, and ASI, various years. All numbers in millions.

The new categories of workers like Diploma Trainee or Apprentice are not even recognised as ‘workers’ and thus have minimal connection with the union process.

The authors find that employers have different ways of circumventing labour regulations, the enforcement of which is also weak. None of the employers in the study found inspections from labour officers as a major cause of concern. For example, as per contract, workers have to be paid Provident Fund (PF) and gratuity. They are eligible for gratuity if they complete five continuous years with a single employer. However, workers reported that the employers encouraged them to terminate their current contract and claim PF benefits just before completing five years. The workers rejoin the same factory within a week or so on a new contract. This significantly reduces the labour bill for employers. The authors also found that the law mandating public holidays is being flouted. Workers are required to work on Sundays to compensate for a public holiday.

Informalisation of work in the formal sector like automobiles has shifted the burden of production from permanent to various categories of temporary workers. Permanent workers have been a small minority of workforce. Their union, thus, has less control over production. The new categories of workers like Diploma trainee, Student trainee, Diploma Apprentices are not even recognised as ‘workers’ and thus have minimal connection with the union process.

Contrary to popular perception, it appears that capital intensive industries are more reliant on contract workers than labour intensive industries. Contract workers constituted 37 per cent of total workers in Chemicals and 47 per cent of total workers in Motor Vehicles while in Textiles and Apparel the corresponding figures were 20 per cent and 15 per cent respectively (Kapoor 2018).

Nagaraj (2018) argues that the current labour law regime does not serve the purpose of either workers or entrepreneurs. A multitude of laws with overlapping jurisdiction give the impression of high bargaining strength of organised labour. But this in principle situation meets the reality of a large pool of surplus labour willing to work at subsistence wages. This gives power to employers, whose interests lie in circumventing the seemingly strict labour laws resulting in numerous loopholes. The author suggests that a way out of the dysfunctional regulatory regime is to simplify the laws, along with their strict enforcement. But there is very little support for such pragmatic reforms because workers and employers favour the status quo, as a time-tested low-level equilibrium.



Box 3.2 / The Challenge of Job Quantity and Quality- The Case of Bangalore Garments

The Bangalore garment industry offers a microcosm within which the diverse issues involved in improving job quality and quantity can be appreciated. The industry is a large employer, employing around 400,000 workers in Bangalore alone. But it is also well-known for poor pay and working conditions. The average monthly salary after provident fund deduction is ₹ 7000 to 9000. Abuse from supervisors and other forms of harsh labour control are also common. As a result, turnover is high. The owner of a large firm employing more than 5000 workers, reported an attrition rate of 8-10 per cent a month. That is, almost their entire workforce is replaced in a year.

Some pressure on improving job quality comes from Karnataka's state laws on minimum wages as well as from multinational garment brands (including fast fashion brands like Zara and H&M) who are keen to avoid negative publicity. This has meant, for example, that migration has not been a major source of labour supply because the housing conditions for migrant workers come under scrutiny.

Manufacturers are considering relocation, which is relatively easy in the industry, given its low levels of capital per worker, as a strategy to overcome the problems of labour supply, increasing wages and unions. Some of Bangalore's manufacturers have begun to relocate their factories to rural areas of Karnataka and also to Andhra Pradesh (Hindupur) and Jharkhand. One of the manufacturers mentioned that they have begun relocating to African countries as well, where the labour costs are much lower. This firm has already set up 'sheds' in Ethiopia.

At the level of trade policy, there has been a sharp reduction in the amount of import duty that the government waives for export-oriented industries. For the apparel industry, this was reduced from 7.3 per cent to 2 per cent in 2017. Exporters in Bangalore complain that the reduction in duty rates has come as a shock when they are already facing severe competition from the global market.

A second, expected headwind to job creation is of course, automation. One of the manufacturers interviewed mentioned that machines could downsize the workforce needed to stitch a garment by more than half.

Another possible strategy for the garment manufacturers is to produce for the domestic market and develop and market their own brands – rather than being suppliers to global brands in export markets. By entering into marketing of their products, firms get to keep a larger share of the value added. However, gaining entry into the markets by selling their own brands requires huge marketing expenditure, which is difficult for small firms.

Not surprisingly, the study concludes that government support is crucial for the future growth and survival of the industry. One of the ways in which the government can attract investments while ensuring labour welfare is by providing wage subsidies. Arvind Limited has recently signed an MoU with the Gujarat government to set up a mega apparel facility in that State, which will create employment for women workers with the help of wage subsidies from the government.

Sources and notes: *Thomas and Johny (2018)* and [Headwinds hit readymade garment exports in April-September](#).



3.3.4 / Better and Worse Performing Manufacturing Industries

We now go beyond the aggregate trends to identify which industries did better at job creation. Figure 3.7 shows employment trends in the same set of selected industries as Figure 3.6. The data have been indexed to the first year (1983) in order to show the growth rate. The apparel, plastics, and footwear industries have grown the fastest in terms of employment. Focusing on the below-average performers in this set, we see that there is substantial diversity in their performances. Some, such as furniture, have more than doubled their employment over the period while others such as textiles registered an absolute decline in employment (Figure 3.7b).

The next question is how does employment growth relate to change in output, and is it accompanied by increases in productivity and wages? We approach this question in two ways. First we take a look at the RBI Capital-Labour-Energy-Materials-Services (RBI-KLEMS) data on the relationship between growth in the value added and growth in employment. This data has an important limitation that many industries that have performed quite differently from one another are grouped together. Hence it should be interpreted carefully and in combination with other more disaggregated sources. To address this issue we use ASI data at a finer level (3 digit NIC) to ask which industries delivered both job growth and wage growth.

Figure 3.8a shows a scatter plot of growth in value-added versus growth in employment between 2011 and 2015 for various manufacturing industries plus construction. Each bubble represents an industry and the size of the bubble signifies the share of that

industry in total employment. The horizontal and vertical lines represent median values of employment and value-added growth respectively. Overall we find weak correlation between growth of value-added and employment growth over this period.

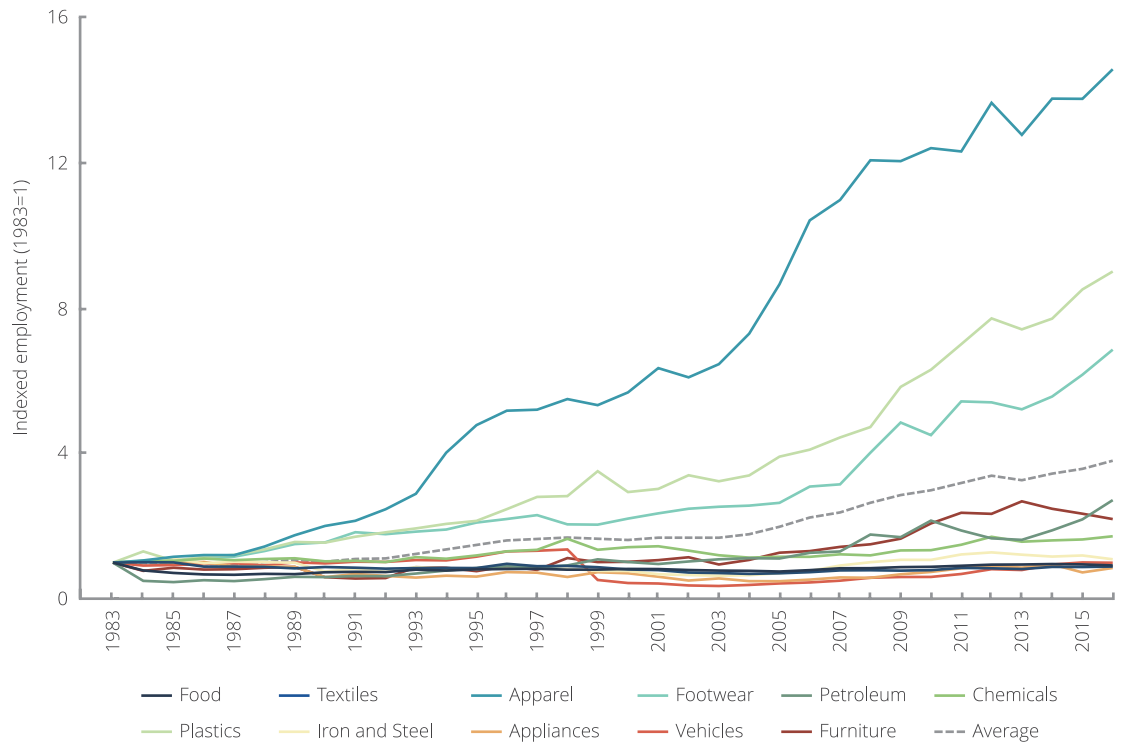
For example, the construction industry accounted for a large share of employment in 2011 and subsequently grew fast in terms of jobs but much more slowly in terms of value added, placing it at the top left of the scatter diagram. Other large manufacturing employers such as Textiles, Garments and Leather (TGL) as well as Food, Beverages, and Tobacco (FBT) have registered strong output growth but weak or even negative employment growth. The presence of only two industries in the top right quadrant indicates that hardly any industries have registered rapid growth along both dimensions. The exceptions are rubber and plastic products, and machinery, both of which posted above median growth on both dimensions. Otherwise, industries that have shown rapid growth in share of value added have not shown high employment growth even when they are relatively more employment intensive. And those that have shown rapid employment growth have shown low growth in value added.

As mentioned earlier, the RBI-KLEMS data is at a level of aggregation that hides important variation. Basole and Narayan (2018) use ASI data over a longer period (1982 to 2015) and at more disaggregated NIC 3-digit level to classify manufacturing industries into better or worse performers along two dimensions, employment elasticity and wage growth. As noted earlier, the period after 2006 stands out as one during which organised manufacturing posted much faster employment growth than seen in any preceding period going back to 1982.

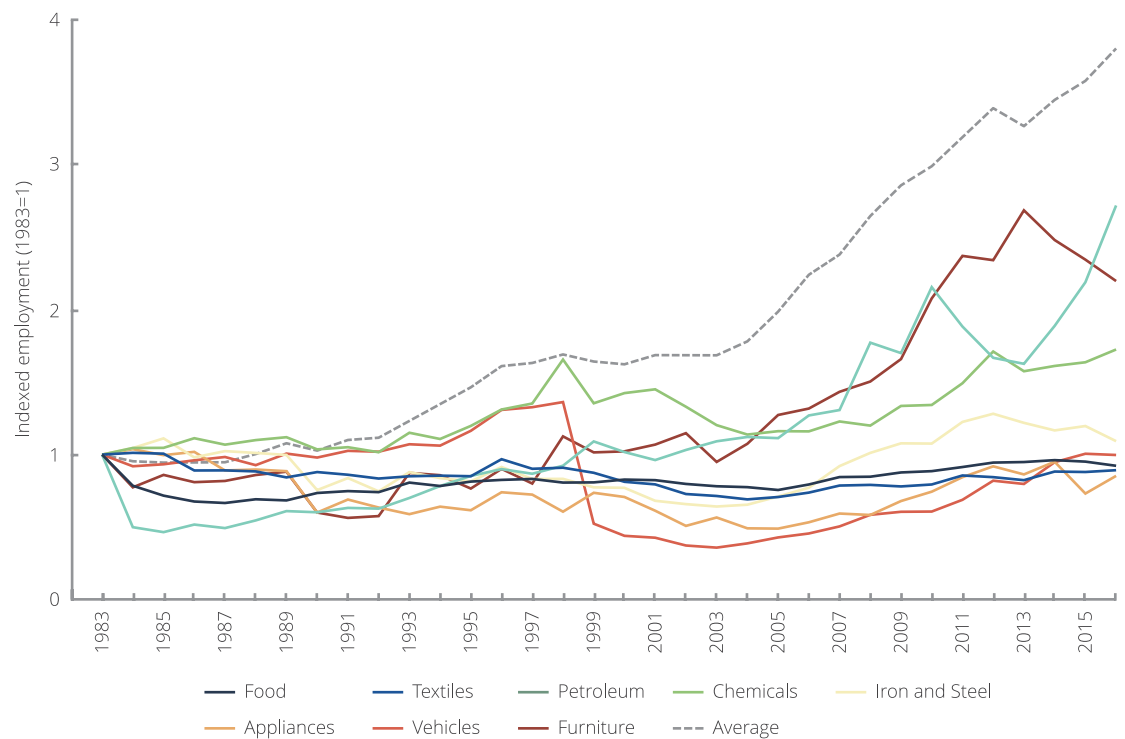


Figure 3.7 : Employment Growth in the Organised Manufacturing Sector

a) Selected Industries



b) Below-Average Performers among Selected Industries



Sources and notes: ASI NIC 2-digit (EPWRFITS), various years.

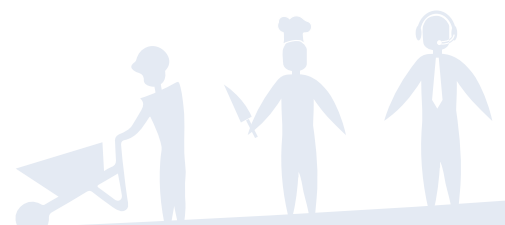
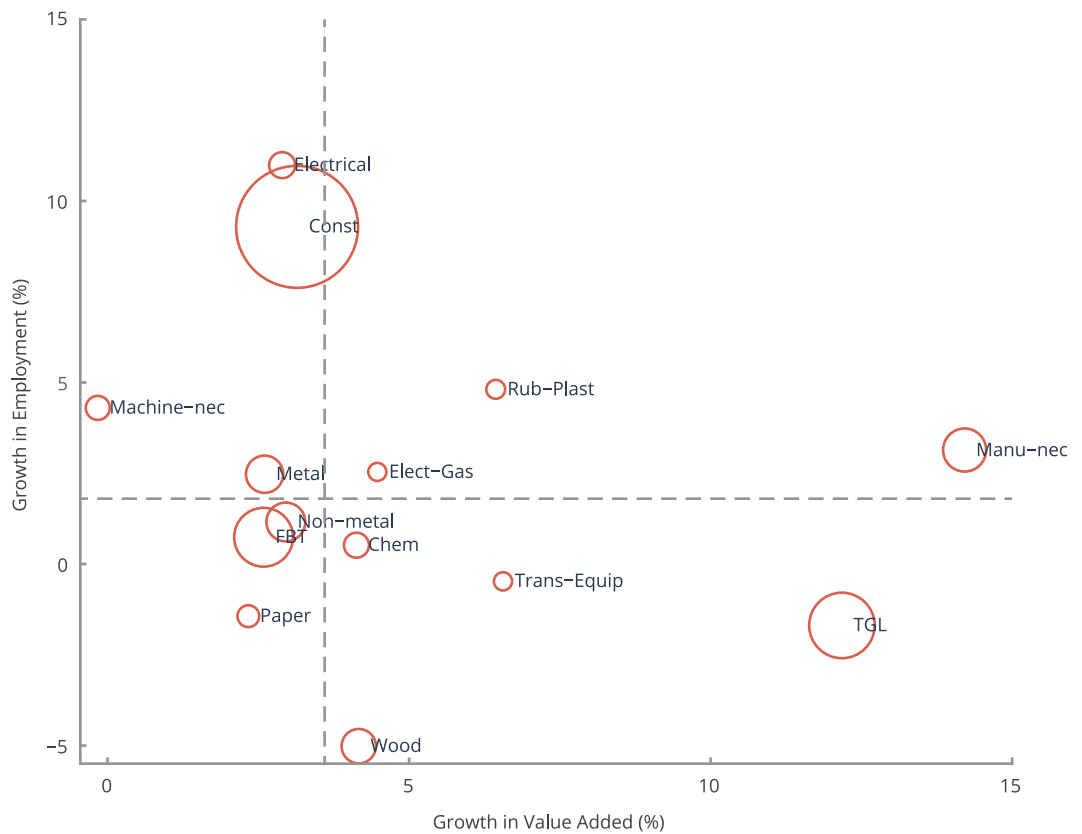
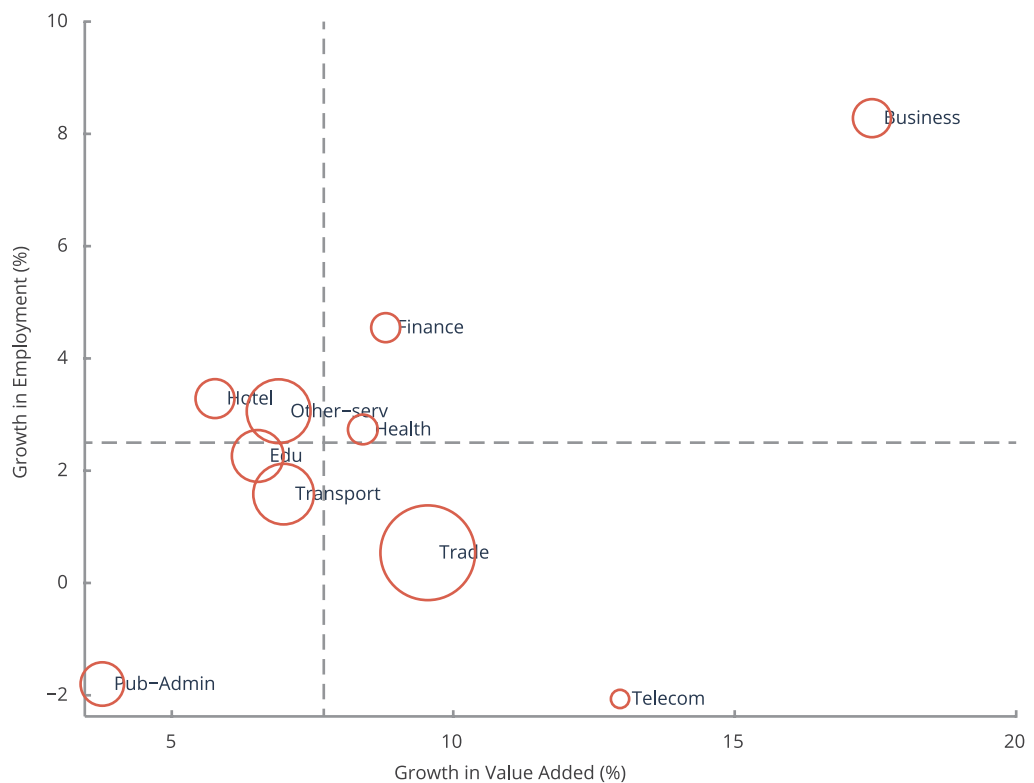


Figure 3.8 : **Output Has Not Been Correlated with Employment Growth**a) **Industry**b) **Services**

Sources and notes: RBI-KLEMS 2011 and 2015. Compounded annual growth rates are shown. Size of the bubble represents employment share in 2011. Lines represent median values. TGL refers to Textiles, Garments and Leather, and FBT refers to Food, Beverages and Tobacco.

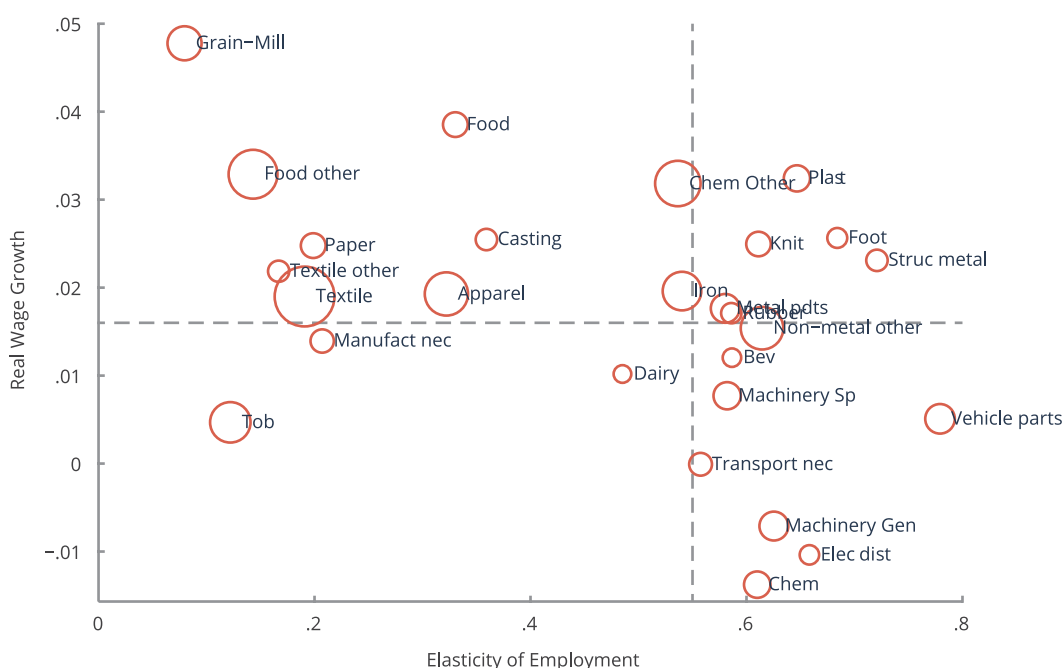
Focusing on this most recent ten-year period (2006 to 2016) we can categorise industries as follows:

- Type A: Above median wage growth and elasticity
- Type B: Above median wage growth and below median elasticity
- Type C: Below median wage growth and above median elasticity

- Type D: Below median wage growth and below median elasticity

These types can be identified in Figure 3.9 which plots the employment elasticity against wage growth. Only industries with an employment share greater than the median value are shown for clarity. Larger bubbles indicate higher employment shares (in 2015).

Figure 3.9 : **Most Industries in Organised Manufacturing Have Experienced Wage Growth or Job Growth over the Last Decade. A Few Have Seen Both.**



Sources and notes: ASI NIC 2 digit (EPWRFITS) 2006 and 2016. Growth rate is calculated by regressing log real wage rate on time. Elasticity is calculated by regressing log employment on log output. Size of the bubble represents employment share in 2006. Only industries with weight greater than 1% are displayed. Lines represent median values.

Table 3.4 : **Typology of Manufacturing Industries**

Type A	Type B	Type C	Type D
Footwear	Processing of meat, fish, fruits and vegetables	General purpose machinery	Tobacco
Plastics	Grain, mill products	Special purpose machinery	Dairy
Knitwear	Other food products	Basic chemicals	
Metal products	Apparel	Electrical appliances	
	Textiles	Motor vehicle parts and accessories	
	Paper	Beverages	
	Casting of metals		

Clearly, several more industries have posted a mixed performance than an all-round positive or negative one. However, it is worth emphasizing that in the 10 year period, large employers such as footwear, knitwear, and plastics have displayed above median wage growth as well as employment growth in the organised manufacturing sector. Of course, it is possible that this has come at the expense of employment in the unorganised sector. The ASI data does not allow us to comment on this aspect.

On a more mixed note, employment-intensive industries such as food processing, textiles, and apparel have shown weak capacity for employment generation while posting higher than median rates of wage growth. The opposite is the case for machinery, electrical appliances, vehicle parts, basic chemicals, and beverages where job creation has been strong but wage growth has been low or even negative.

Note that it is the relatively more capital intensive industries that have posted stronger employment growth, and the more labour intensive industries that have shown stronger wage growth. This is a counter-intuitive finding that needs further investigation.

Another related and counter-intuitive finding is that apparel and knitwear and footwear were also the industries that performed better than average in translating productivity growth into wage growth. This result is surprising given the reputation of these industries for sweat shop conditions. We discuss this further in Chapter Four.

Large employers such as footwear, knitwear, and plastics have displayed above median wage growth as well as employment growth.

3.3.5 / The Performance of the Unorganised Manufacturing Sector

As noted earlier, until 2005, most manufacturing employment growth occurred in the unorganised sector. Despite the organised sector picking up pace since 2006, the majority of the manufacturing workforce remains in the unorganised sector. The Lewis process is thus far from finished.

Here it is important to distinguish between the relatively more modern and profit-oriented and the relatively more subsistence-oriented

parts of the unorganised sector. But empirically the distinction between subsistence and profit oriented enterprises is not easy to make. One way to operationalise the difference using NSS data on unorganised enterprises is to define necessity-driven or subsistence entrepreneurship as own-account enterprises operated by a single worker or with the help of family labour only. On the other hand, enterprises operating with at least one hired worker can be considered as opportunity-based entrepreneurship (Daymard 2015). We analyse the performance of the unorganised manufacturing sector using this framework.

NSS data reveal an 'infantilisation' of the sector over time, that is, a process wherein smaller firms increase their share in the sector. The share of own-account enterprises (OAEs) or single-worker firms in total firms went up from 32 per cent in 1994 to 59 per cent in 2015 (Table 3.5). This increase has come almost entirely at the cost of family-based enterprises while the proportion of establishments (enterprises that hire at least one wage worker) has not changed over the entire period. While a decline in family-run enterprises may be desirable in so far as they may employ unpaid workers and child labour, job creation in this sector has mostly been in the form of subsistence-oriented rather than profit-oriented firms.

Coming to the share of these enterprises in total workers in this sector, once again we see a large gain in the share of own-account workers. However, establishments have also increased their share of workers over the entire period, barring the most recent five-year period. Both these types of enterprises have gained workers at the expense of family enterprises. The fact the establishments have increased their share of workers without substantially increasing their share in firms indicates that there has been an increase in the size of the average establishment.

Lastly, single-worker firms are much less productive than establishments. In 2015, they accounted for 35 per cent of workers but only 29 per cent of value added in this sector. Establishments on the other hand accounted for 35 per cent of workers but 54 per cent

of value added. Single worker firms are three times more likely to be home-based and have one-tenth the asset base of establishments. Establishments are nearly two times more productive in terms of value added per worker (Table 3.6). This points to a factor misallocation similar to that observed between agriculture and the rest of the economy, and is an indicator of the presence of surplus labour in the OAE and family-firm sector.

There is some heterogeneity in the different periods as to which type of enterprises created more jobs. In the most recent five-year period for which data are available (2010 to 2015), the output elasticity of employment for OAE

or single-worker firms was 0.1 while that for establishments was -0.63. This period, as noted before, has been one where the unorganised sector employment has not grown. Thus the low numbers are not surprising. But it is certainly a matter of concern that the establishment sector lost jobs in the period. Unni and Naik (2018) find that more than half of the unorganised enterprises were contracting for the three years prior to 2016.

Given the continued dominance of micro enterprises in the unorganised sector, whose size lies far below the threshold where labour laws apply, an important area of study is what constrains the growth of firms in this sector.

Table 3.5 : **Distribution of Firm Types in the Unorganised Manufacturing Sector**

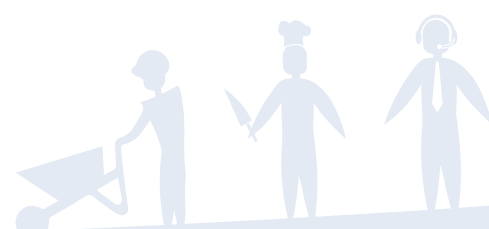
Year	Distribution of firms across firm types (%)			Distribution of total workers across firm types (%)			Distribution of GVA across firm types (%)		
	OAE	Family	Est.	OAE	Family	Est.	OAE	Family	Est.
1994	32	54	14	12	62	26	18	32	50
1999	44	43	13	24	47	28	23	32	45
2005	40	46	14	21	43	36	15	25	60
2010	53	31	16	29	32	40	23	19	58
2015	59	26	15	35	29	35	29	18	54

Sources and notes: NSS Enterprises Survey, various years. Est. refers to Establishment. See Methods chapter for details.

Table 3.6 : **Employment Elasticities by Firm Type**

Year	OAE	Family Enterprises	Establishments
1994-1999	0.75	-1.25	-0.79
1999-2005	-0.92	1.13	0.63
2005-2010	0.24	-1.20	0.14
2010-2015	0.12	-0.52	-0.64

Sources and notes: NSS Enterprises Survey, various years. See Methods chapter for details.



3.4 / A Preliminary Analysis of the Service Sector

Rapid diffusion of technology as well as constraints placed on the manufacturing sector by trade (such as having to compete on low unit costs) have meant a rapid mechanization or increasing capital intensity across industries, as we saw earlier. The resulting rise in productivity means that fewer and fewer workers are needed to produce the same value of goods. As a result, India and many other developing countries are showing a tendency towards a declining importance of manufacturing in employment.

In the past few years there has emerged a considerable body of work that argues for services as the new engine of structural transformation, with India being a leading example of this phenomenon. Since 2004 the share of service sector employment has increased from 23.4 per cent to 30.2 per cent. Just between 2011 and 2015, absolute employment in services jumped from 36 million to nearly 52 million for youth, and for all labour from 127 to 141 million (Mehrotra 2018). Employment elasticities for both agriculture and industry were negative in this period but that of services was positive at 0.3.

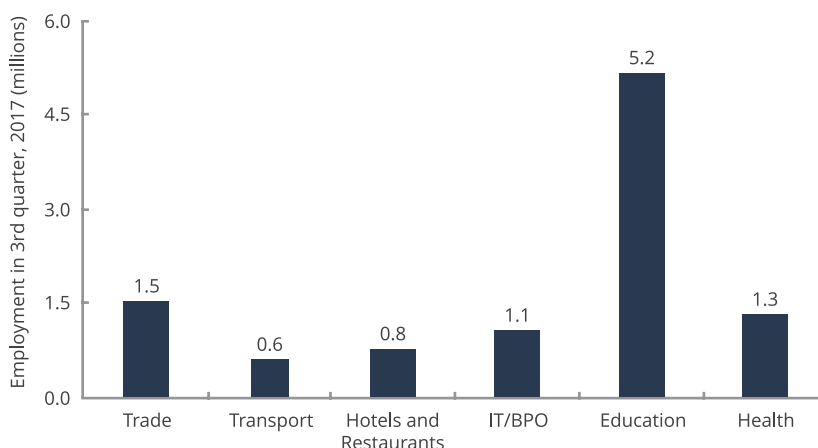
However, before we welcome this development, it is necessary to know how much of this employment was created in the subsistence or informal part of the service sector and how much in the organised part. In this respect a major problem is a lack of data. The government

plans to introduce an Annual Survey of Services along the lines of the ASI, but this decision is yet to be implemented at a national level. Hence, the data for this section comes primarily from the NSS unorganised sector surveys (conducted every five years) and the Labour Bureau's Quarterly Employment Surveys (QES) that include a few key service industries.

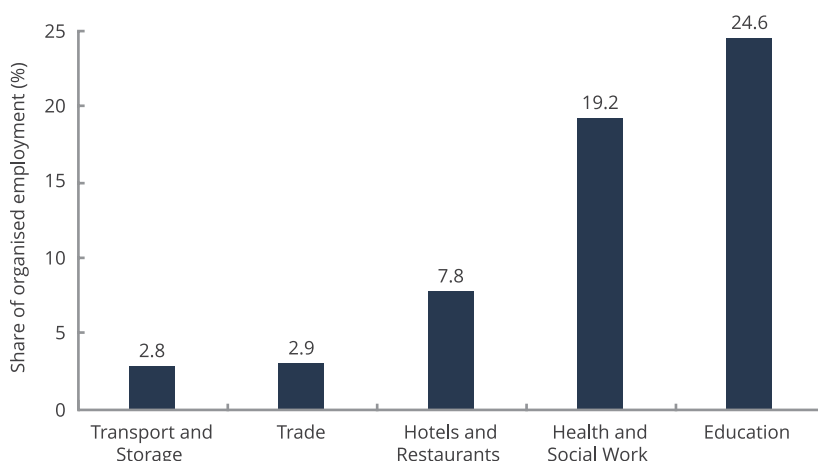
The RBI-KLEMS data can be used, as in the case of manufacturing, to identify service industries that have experienced above median value-added and employment growth (Figure 3.18b). The median rate of growth of value added is nearly three times that of employment in services, as opposed to twice in manufacturing. Most service industries have seen robust value-added growth, but employment growth has been much more variable. There are some large service sector employers that have performed poorly in terms of employment growth, for example, public administration and trade. Almost all others, with the exception of finance and business services (both relatively small employers), have shown weak job growth.

As per the most recent available estimates from the QES, the major organised service industries namely, trade, transport, hotels and restaurants, IT/BPO, Education, and Health together employed an estimated 10.5 million workers. This is a small increase since the first quarter of 2016 (the first instalment of the new QES series with an enlarged sample), when the employment in these industries was at 10.04 million (Figure 3.10).

Figure 3.10 : *Employment in Selected Organised Service Industries*



Sources and notes: LB-QES, 2017 3rd quarter report.

Figure 3.11 : *Share of Organised Employment is Less than a Quarter in All Major Service Industries*

Sources and notes: RBI-KLEMS 2016, LB-QES 2016.

As of 2016, the total employment in the services sector stood at 140-150 million. Of these approximately 26 million were organised sector workers. We arrive at this estimate based on employment as of the last quarter of 2016 in the LB-QES, which covers the organised segment of the following service industries: trade, transport, accommodation and restaurants, IT/BPO, education, and health. To this we add the entire employment reported in 2015 for public administration, financial service, and post and telecommunications (from RBI-KLEMS since these are not covered in the QES). Thus we estimate that around 20 per cent of the service sector labour force was in the organised sector in 2015. Figure 3.11 shows per cent organised versus unorganised employment in some key service industries for which data is available for 2015 from both sources. Trade, hotel, transport are the major unorganised industries (with over 90 per cent of the workforce in the unorganised sector).

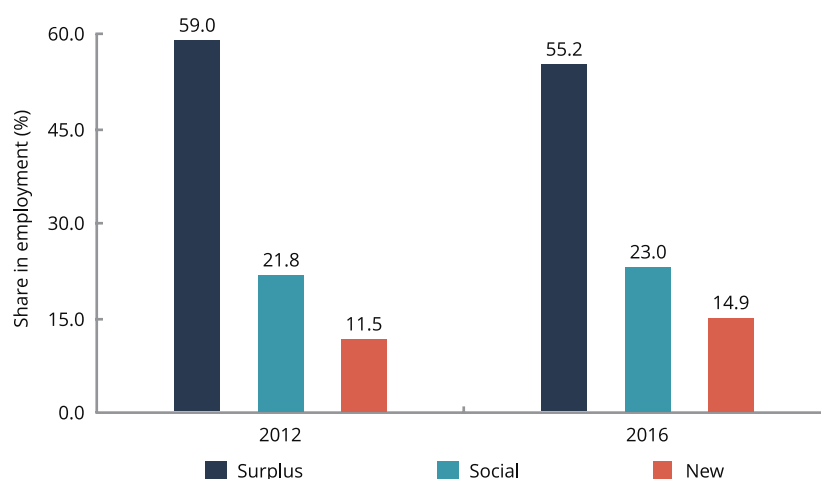
The service sector is large and diverse. It is very important to distinguish between service sector occupations that are only disguised forms of unemployment, and those that offer a pathway to a more prosperous future, for the country as well as the individual.

From the perspective of structural change, a useful way to categorise the diverse service sector activities is into three large types: the surplus sector, the social sector, and the new service economy. We treat the unorganised segments of trade (mostly petty retail), hotel, and transport along with all domestic workers

as constituting the surplus sector. All of health and social work, arts, education, and public administration make up the social sector. The new service economy, largely organised, consists of big retail, hospitality, finance, information technology and IT enabled services, business process outsourcing, and security services. This is not an exhaustive classification but together these accounted for 93 per cent of service sector employment in 2016. An important omission is the burgeoning security services industry. Nevertheless, it enables us to get a sense of the relative importance of each sector in services as well as in the total workforce.

Figure 3.12 shows the shares of each sector in 2011 and 2016. For example, the surplus sector accounts for 55 per cent of service sector employment and 17 per cent of total employment in the country. With manufacturing (organised and unorganised) at 11 per cent and construction at 10 per cent, the surplus service sector is the single largest sector of the economy in terms of employment, after agriculture. The social services sector accounts for around 23 per cent of service sector employment and 7 per cent of total workforce, while the new service economy is around 15 per cent of the service sector and 4.5 per cent of the workforce. The share of the new service economy has increased between 2012 and 2016, from 11.5 to 15 per cent and the share of the social sector has increased from 22 to 23 per cent, at the cost of the surplus sector (59 per cent to 55 per cent).

Figure 3.12 : 'Surplus' Industries Account for More than 50 per cent of Service Sector Employment



Sources and notes: RBI-KLEMS 2016, LB-QES 2016. 'Surplus' industries refer to industries dominated by self-employment and petty production. Education, health, and public administration are considered to be 'Social' industries. Finance, IT-BPO, and organised retail are defined as 'New' service industries. Numbers do not sum to 100 due to exclusion of some industries.

Mehrotra (2018) uses a broader category of 'modern services' which includes sale/maintenance of motor vehicles, hotels and restaurants, air transport, posts and telecommunications, financial intermediation, insurance and pension funding, computers and related activities and research and development to find a 'silver lining' in the jobs story, namely, the rapid growth of these industries between 2004 and 2015.

The IT-BPO industry deserves special mention. As per the LB-QES, this sector had nearly 4 per cent of firms reporting more than 5000 employees in 2016. This is far greater than any other sector covered (manufacturing is a distant second with 0.26 per cent). Thus, despite the much smaller size of the sector vis-a-vis manufacturing, Information Technology and Business Process Management (IT-BPM) accounts for 48 per cent of establishments above 5000 workers, while manufacturing accounts for 52 per cent. To the extent that the quality of work improves with firm size, either via more regulated labour practices, availability of benefits, or through higher productivity and wages, IT remains a key service sector industry for India's structural transformation. However, from a macroeconomic perspective, its share in employment is too small to matter by itself. It may also be undergoing a structural shift that prevents it from being an engine of job creation in the near future (see Box 3.4).

Since reliable, public data on services are scarce, we must make use of industry studies, primary field studies, and other reports that appear periodically. Thus the National Association of Software and Services Companies (NASSCOM) estimates that as of 2012 there were around 2.77 million workers employed in IT and BPM. Of these 1.3 million, were in IT service exports, 0.87 million in BPO exports, and 0.6 million in domestic IT-BPO.¹ The sector has seen 9 per cent employee growth and 16 per cent revenue growth. Disturbingly, net new hiring in the IT services industry fell from 230,000 in FY 2012 to 100,000 in FY 2018. As a result, there has been 'increased decoupling of revenue and headcount lead (sic.) by productivity gains, automation solutions, efficiency and onshoring.' (NASSCOM 2017)

Of particular interest from an employment perspective are rapidly growing service industries such as security services. Here too, adequate data is not forthcoming. As per the 2015 joint report by Grant Thornton and the Federation of Indian Chambers Commerce and Industry (FICCI) on Private Security Services in India, the security industry employed 7 million workers, making it larger than healthcare and almost as large as public administration. There is an urgent need to collect reliable official statistics on such industries. This also brings up the issue of social usefulness of newly created employment.

Despite its much smaller size IT-BPM accounts for 48 per cent of establishments with more than 5000 workers, while manufacturing accounts for 52 per cent.

¹ [Indian IT-BPO Industry – Strategic Review 2012](#).

With inequality on the rise, forms of 'guard labour' (Jayadev and Bowles 2006) are becoming more important. This is clearly not a desirable development from a social perspective.

A second cautionary note is regarding the social service sector. Both health and education, large

employers, have seen a rapid rise in contract work even in the public sector. Mondal et al. (2018) comment on the fact that wages of anganwadi workers and village healthcare workers, mostly women, are much lower than those received by regular government employees.

Box 3.3 / The State of the IT Industry

Devika Narayan

In January 2015, Tata Consultancy Services, India's largest software services firm fired approximately 25,000 software engineers (Narayanan 2015). This event inaugurated a new trend in India's globally connected IT industry. In 2017, growing layoffs finally sparked national debate (Sridhar 2017). News reports and interviews with IT employees confirm that leading companies, that only a few years ago were aggressively recruiting new employees, are not only hiring in relatively small numbers but are actively pushing employees out (Narayan 2017; Subramanian 2017).

A drop in the hiring rates will affect the tens of thousands of engineering graduates who aspire to enter the IT workforce as they encounter firms that are reluctant to hire in the volumes of the preceding two decades.

The claims and findings presented below are based on ongoing research that commenced in 2014 and relies on over 100 in-depth interviews with middle managers, senior executives and employees and founders of technology startups. Apart from this, technology journalists, trade analysts, head hunters and emerging IT union representatives were routinely interviewed.

1. Downsizing is not a temporary phenomenon but reflective of permanent, structural shifts.

The era of labour-intensive growth in IT is over and job creation will occur at a decelerated pace.

The expansion of India's IT sector has depended on the IT investments that large American and European companies make into their own IT systems. Quantitative and qualitative shifts in the "IT spend" of client corporations instantly affect the firms to which IT development and maintenance tasks are subcontracted. Simplifications in the way enterprises organise, develop and maintain their IT infrastructure implies an erosion of back-office IT work that typically has been off-shored.

Cloud computing centralises IT infrastructure and enables companies to share computing resources (Mosco 2015; Kushida, Murray, and Zysman 2015). Secondly, new software programmes automate certain labour-intensive tasks such as software testing and IT helpdesk functions. Given the gradual but undeniably steady shifts in the way enterprises across the global economy access and consume technology, these effects are best understood as structural rather than cyclical.

2. Restructuring of firms is also contributing to job losses.

New employees (1-5 years of experience) do not receive the quick promotions and salary hikes that have defined the IT industry. However, their jobs are (relatively) protected by the fact that to the firm they represent cheap labour at the bottom of the pyramid. Mid-career professionals who joined



the industry roughly in the 2000-2010 period bear the brunt of the cost-cutting drive that grips today's firms.

Despite the industry's attempt to cast the irrelevance of the middle managers as an issue of skill deficiency, the fact is that middle managers are expensive in the eyes of the company. These are individuals who have moved up the corporate ladder rapidly and now earn between 15-20 lakhs per year. As it turns out they also constitute a large segment of the much celebrated IT workforce (Alawadhi and Mendonca 2017). In-depth qualitative interviews reveal that after losing their jobs, these employees find it very difficult to find re-employment. They either turn to expensive certifications in 'new technologies', attempt small-scale entrepreneurial initiatives, rely on broader familial networks or sometimes find lower paying jobs. Many continue to spend long stretches of time without incomes.

3. The erosion is not just of the number of jobs but also the quality of jobs and working conditions.

IT employees at the large firms are under new kinds of pressure. The workplace is a high-stress environment and working hours often extend to 13-15 hours per day. 'Fresher' salaries have been stagnant for a very long time. New management practices such as 'agile strategies' render employees accountable on a daily and weekly basis while making project requirements ever-changing. Many interviewees discussed the dual pressure they face from their clients as well as their own managers (who themselves are at risk of losing jobs). The pressure, they say, to produce 'more from less' has never been greater.

4. There are new areas of work that are emerging. However these are not labour-intensive and will not compensate for the number of jobs reduced.

The boom in technology-intensive start-ups (both consumer and business facing) has opened up a new area of employment for an educated, upwardly mobile, young workforce, particularly for highly skilled software engineers – but also recruits for sales, marketing and product management divisions. Large IT companies are also looking to make specialised, targeted hires, particularly in areas like cloud security and data analytics.

With the erosion of labour-intensive tasks of software testing, integration and maintenance, hiring will always be modest compared to the 'golden years' of expansion. Start-ups are of course much smaller (in terms of employees) and aim for high labour productivity (revenue per employee). Moreover, it is widely acknowledged that this is a volatile sector, fueled by venture capital and business models that privilege sales and user growth over profitability and therefore we can presume that many fledgling companies will fail, merge or be acquired.

Given the high demand for niche skills and a lack of demand for the 'generic' skills of the previous era, we see an increasing polarisation of the labour market. This polarisation occurs not simply along the axis of skill and salaries but other social markers. Hires on the top-end tend to come from elite institutions (such as the IITs) rather than the numerous tier two and three institutions that the previous era produced. Further the startups are much more homogenous and exclusive from the perspective of caste and gender than the traditional IT workforce.

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Box 3.4 / Creating Green Jobs

Traditionally, environmental regulation has been perceived to restrict economic growth and job opportunities. However, more recent studies indicate positive relationships between investments in clean energy and job growth, including in India. There are three ways to reduce carbon emissions per unit of output: using those sources which have lower carbon emissions among fossil fuels, increasing use of green energy sources, and raising the efficiency of energy use.

Using Input-Output data and the employment-unemployment surveys for India, Azad and Chakraborty (2018) project employment generating capacities for fossil-fuel based and renewable energy sectors as well as the energy efficiency sector. They also study the distribution of employment generated by region, gender, caste, and educational status.

Sources and notes: *Azad and Chakraborty (2018)*

The study finds that investments in a green energy program would generate on average almost 2.5 times the jobs created through the fossil fuels sector. The most labour-intensive sector, bio-energy, can generate 60 jobs per crore rupees of investment compared to 5 jobs for the same amount in the coal industry. Weatherisation is estimated to generate around 20 jobs and public transport around 10 jobs per crore of investment.

The study also finds that the composition of the jobs generated in the clean energy sector is more favourable to women, Scheduled Castes and Tribes, unskilled labourers and rural areas compared to that generated by investment in the fossil fuels industry. Hence investments in clean energy are more inclusive. However, the distribution of green jobs is also more skewed in favour of the unorganised sector. The authors identify this as a challenge to the clean energy programme if it is to result in secure livelihoods.



Box 3.5 / Change and Adaptation in the West Bengal Handloom Industry

The handloom industry continues to be a major employer in India. Though recent data are not available, as per the 2009-2010 Handloom Census this industry employed 4.3 million workers. West Bengal, the focus of a three-district study by Bhattacharya and Sen (2018) stands out among Indian states with the highest number of looms and highest number of weaver households engaged in commercial production. The study focuses on Hooghly, Nadia and Purba Bardhaman districts and draws on interviews conducted with a wide variety of industry actors such as weavers, master weavers, panchayat officials, cooperative societies, traders, and state officials.

The authors note that the simple story of decline in handloom employment and rise of powerlooms is not uniform across regions or over time. The total volume of cloth production in the powerloom sector as well as its share has fallen since 2012-13, while it has risen in the handloom sector. West Bengal and North-Eastern states of India showed an increase in the number of weaver households between the second and third Handloom Censuses, conducted in 1995-96 and 2009-10 respectively. There has been very little growth of powerlooms in handloom-major states like West Bengal. Thus, it is not surprising that only 16.2 per cent of handloom worker households in West Bengal perceived powerlooms to be a major threat, as compared to 84.6 per cent in Andhra Pradesh and 46.5 per cent in Tamil Nadu.

Sources and notes: *Bhattacharya and Sen (2018)*

But this does not mean handloom weavers want their children to continue in the same occupation. Nearly 85 per cent of those interviewed explained this reluctance as being due to the time-consuming, hard and un-remunerative nature of work. The Handloom Census revealed that the average annual income of handloom worker households in West Bengal was only around Rs. 27,000 in 2010. Bhattacharya and Sen (2018) find that average earnings are less than or only somewhat higher than the MNGREGA wages for unskilled labourers, and often lower than the daily wages of construction workers or auto rickshaw drivers. In the sample, the average weekly earnings of a weaver household range from Rs. 500 to Rs. 1000.

Interestingly, however, the recent history of this industry is not only of exit, but also of entry along with acquisition of skills by new entrants. Weaver households have tried to compete by moving on to the production of finer cloth that machines cannot not imitate easily. This has been a common competitive strategy in other places also. In all study areas, there is a common complaint of skill deficit due to a decline in availability of highly skilled weavers, whose products can beat powerloom products. This is because older workers find it more difficult to adapt to new designs, while younger workers have not been taking up the trade.



3.5 / Conclusion

The Kuznets process remains slow in India with just under half of the workforce still in agriculture and allied activities. To the extent that there has been a transition from agriculture, it has largely been to construction and not manufacturing. It is possible that the period between 2011 and 2015 was the worst in recent years in terms of structural change. But lack of comparable data makes it hard to be definitive on this matter. There is considerable state-level variation in the Kuznets process. Some large states such as Tamil Nadu, Kerala, Punjab and West Bengal have diversified economies; others such as Bihar, Maharashtra, and Andhra Pradesh, much less so.

The organised manufacturing sector has shown a strong turnaround in the past decade in terms of its employment generation capacity. Several large industries such as footwear, knitwear, and plastics have shown good employment elasticities as well as wage growth.

Many others have shown employment growth. But job growth in this sector has come at the cost of unorganised sector employment and the overall share of manufacturing in total employment has not increased. Declining labour intensity is observed in almost every manufacturing industry. But it is unlikely that labour laws are responsible for the substitution of workers by machines. Indeed, there is strong evidence that firms have continued to hire workers circumventing the laws.

Lack of data on the service sector makes detailed analysis difficult. However, available data suggest a small decrease in the share of employment accounted for by the surplus sector and a small increase in the new service economy.

The question, thrown up by the foregoing analysis on the quantity of employment created in various sectors, is about consequences on the quality of jobs. We take up this question in the next chapter.

