

India Needs Rapid  
Manufacturing-LED Growth

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# INDIA NEEDS RAPID MANUFACTURING-LED GROWTH

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## I.

India has had rapid services-led growth for more than a decade. GDP growth averaged 7.3 per cent per annum during 1999/00-2011/12. Growth of services averaged 8.7 per cent per annum during the same period. Growth was even more spectacular during the shorter period 2002/03-2007/08, when GDP growth was 8.7 per cent per annum and services growth was 9.5 per cent per annum. This process has now stalled. Growth slowed down very substantially after 2011/12 though it remained services-led.<sup>2</sup> The questions that naturally arise are: Should India strive to revive rapid services-led growth? Or should it shift to rapid manufacturing-led growth?

To most economists, India's rapid services-led growth has always seemed rather fortuitous and unsustainable. For, both historical experience and economic reasoning lead us to expect growth at India's level of per capita income to be led by manufacturing and not by services.

In today's developed countries, manufacturing led economic growth at early stages of development and services took over the lead role only after per capita GDP had already reached high levels.<sup>3</sup> The same pattern has been observed in late developers of East Asia, not just in Japan, Republic of Korea, and Taiwan, but also in China, Indonesia, Malaysia and Thailand. The economic logic of this empirically observed pattern of growth is also well understood.<sup>4</sup> On the supply side, productivity in manufacturing grows faster than that in services. There also are significant economies of scale in manufacturing where output growth itself causes productivity growth. And manufacturing generates economy-wide increasing returns to scale through significant spill over effects on non-manufacturing activities. On the demand side, the income elasticity of demand for manufactures is much higher than that for services at low levels of per capita income. It is only at high levels of income that the income elasticity of demand for services tends to exceed that for manufactures. Finally, manufactures are tradable so that external demand can play a significant role in stimulating and sustaining growth of manufacturing. Services generally are not (or until recently were not) tradable.

Some economists now argue that, thanks to technological developments, certain services have actually acquired the characteristics of manufacturing. In services that have

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2. The recent release of a new series of national accounts has created much confusion about growth in the period since 2011/12. Many have expressed doubts about the robustness of the new estimates. At any rate, since 2011/12 is the earliest year for which the new estimates are available, they do not tell us if and to what extent there has been a growth slowdown in the post-2011/12 period. At this point, our judgments must unavoidably be based on the older series, which show a sharp slowdown in GDP growth and a much milder slowdown in services growth.

3. We know this from the works of Kuznets (1957, 1966).

4. Coherent formulation of the argument is due to Kaldor (1967).

been transformed by advances in digital technology (i.e., in computation-information-communication technology), output growth does cause productivity growth. The income elasticity of demand for these services seems to be high even in poor countries. And these services are internationally tradable. Moreover, the advances in digital technology have not only transformed services but also have had important spill over effects on industry. They have brought about fragmentation of production and global value chains in manufacturing. They also have set off a process of technological change that is lowering the labour intensity and increasing the skill intensity of manufacturing. It is for these reasons that the digital revolution is often compared to game-changing inventions of the past such as those of electricity and internal-combustion engine.

It has, therefore, been argued that, in the twenty-first century, services-led growth is as possible as manufacturing-led growth in low-income countries. India's services-led growth in the twenty-first century, therefore, need not be seen as fortuitous and unsustainable. Rather, it should be seen as an example of a new twenty-first century pattern of growth in low-income countries and thus as a precursor of other experiences to come.<sup>5</sup>

Sensible though these arguments seem, real-world experiences are yet to bear them out. India has thus far remained the only lower-middle-income country to have experienced rapid services-led growth for a certain period. And even India's growth has now decelerated precisely because it has been services-led.

The fundamental explanation for India's growth slowdown lies in the fact that rapid services-led growth inevitably engendered totally unsustainable trade deficits. For, it generated a large and growing imbalance between the structure of domestic absorption (consumption plus investment) and the structure of domestic production. Crude calculations show (for example) that, in 2011-12, goods accounted for 65 per cent of domestic absorption but only 45 per cent of domestic production. There was thus a huge shortfall in goods that had to be covered by imports and it was this that fundamentally caused the large trade deficit (6.4 per cent of GDP in 2011/12).<sup>6</sup>

This also tells us why a revival of rapid services-led growth is difficult to contemplate; any such revival would immediately generate large trade deficits. Sustainable rapid growth is one that must progressively reduce the imbalance between domestic absorption and domestic production. And that means manufacturing-led growth.

Here is sufficient reason why we must think about a transition to manufacturing-led growth. But there is another weighty reason. India has a large mass of surplus low-skilled labour in agriculture that must be moved to productive employment in non-agriculture. We know from past experience of other countries as also from recent experience of India (as we shall see below) that only manufacturing is capable of productively absorbing this mass of low-skilled labour.

Many argue, however, that history is unlikely to repeat itself because technological change has altered the nature of manufacturing. Growth of manufacturing, it is now being argued, can no longer be the route to higher incomes it once was. Nor can manufacturing

5. See Dasgupta and Singh (2005) and ADB (2013). Even these authors recognize, however, that growth of manufacturing remains essential in low-income economies.

6. In fact, this imbalance between demand and production also caused inflation that still persists.

play the traditional role of moving the mass of surplus low-skilled labour from agriculture to productive employment in factories because technological change has reduced the labour intensity of manufacturing very substantially.<sup>7</sup>

These arguments are derived from certain observed time-trends. Even the experience of a limited number of East Asian countries show that while the peak share of manufacturing (as also of industry) in GDP has been fairly similar across countries that have successfully industrialised, this peak was reached at lower levels of per capita GDP in the late developers than in the early developers (Table 1). Thus, across countries, the peak share of manufacturing in GDP was around 32 per cent while the peak share of industry was around 44 per cent irrespective of the period in which they were reached. But the peak values were reached at a much higher level of per capita GDP in the early developers (Japan, Republic of Korea and Taiwan) than in the relatively late developers (China, Indonesia, Malaysia and Thailand). This suggests that industrialisation today will not take a country as far as it did in the past.

Table 1  
**Industrialisation and Growth**

<i>Country</i>	<i>Period covered</i>	<i>Year of peak</i>	<i>Per capita GDP in 2005 US\$</i>	<i>Peak share (%) in GDP of:</i>	
				<i>Manufacturing</i>	<i>Industry</i>
Japan	1880-2012	1970	15162	36.0	46.7
China	1970-2011	2005	1731	32.5	47.4
Indonesia	1970-2012	2004	1222	28.1	44.6
Korea Rep	1965-2012	2000	15162	29.0	38.1
Malaysia	1970-2012	2000	4862	30.9	48.3
Thailand	1970-2012	2007	2946	35.6	44.7
Taiwan	1990-2012	1990	9910	33.3	41.2
Vietnam	1985-2012	2012	986	...	40.6

*Note:* Industry includes, besides manufacturing, mining and quarrying, construction and utilities (electricity, gas and water).

Source: Kuznets (1957); World Bank (World Development Indicators database); Asian Development Bank (Key Indicators for Asia and the Pacific database)

The experience of East and Southeast Asia also shows that the capacity of manufacturing-led growth to shift low-skilled labour out of agriculture into productive employment in industry has grown progressively weaker over time. This is seen from the fact that similar shares of manufacturing in GDP were associated with much lower shares in employment in the late developers than in the early developers (Table 2). Thus a 36 per cent GDP share of manufacturing was associated with a 27 per cent employment share in Japan but with only 15 per cent employment share in Thailand. And a 47 per cent GDP share of industry was associated with a 36 per cent employment share in Japan but with only 24 per cent employment share in China.

Even if we were to take the trends suggested by these data at their face value, they would not tell us that India (or other low- / lower-middle-income countries for that matter) should

7. Innovations such as 3D printing, computer intelligence and industrial robotics (to name a few) are all labour-displacing. For discussions, see McKinsey (2010, 2013) and ADB (2013).

Table 2  
**Industrialisation and Employment**

<i>Country</i>	<i>Period</i>	<i>Share (%) of manufacturing in:</i>		<i>Share (%) of industry in:</i>	
		<i>GDP</i>	<i>Employment</i>	<i>GDP</i>	<i>Employment</i>
Japan	1970	36.0	27.0	46.7	35.7
China	2005	32.5	15.9	47.4	24.4
Indonesia	2004	28.1	11.8	44.6	18.0
Korea Rep	2000	29.0	23.3	38.1	32.3
Malaysia	2000	30.9	22.8	48.3	32.2
Thailand	2007	35.6	15.1	44.7	20.7
Taiwan	1990	33.3	32.0	41.2	...
Vietnam	2012	...	...	40.6	21.1

Note: As in Table 1.

Source: As in Table 1.

not go for manufacturing-led growth. As we shall see below, the shares of manufacturing/industry in GDP and in employment are much too low in India so that the scope for increasing them remains large even under pessimistic assumptions. The fact that the level of per capita GDP associated with the peak share of manufacturing in GDP would be lower in India than it had been in the Republic of Korea does not tell us that reaching the peak share is not worthwhile. The relation between the level of per capita GDP and the level of industrialisation across countries has been and remains strongly positive. And no country has achieved even middle-income status with manufacturing share of GDP as low as that in India.<sup>8</sup> Similarly, the fact that manufacturing growth may not shift as much low-skilled labour out of agriculture as it did in the Republic of Korea does not tell us that the shift would not be substantial.

Importantly, moreover, there is need for much caution in interpreting the data in Table 2. Manufacturing requires services as inputs. In the past, manufacturing firms had service departments for work on design, marketing, finance, transport, distribution, legal affairs, customer support and R&D.<sup>9</sup> Today industrial enterprises outsource many of these services from specialised service enterprises. This means that a substantial part of the employment that counted as manufacturing or industrial employment in the past now counts as employment in services. This is an important reason why the shares of manufacturing / industry in employment are so much lower than their shares in GDP today. This is also a reason why the GDP and employment shares of services now tend to be relatively high at low levels of per capita GDP. All this means that even though manufacturing (or industry) generates less direct employment today than it did in the past, it generates much more indirect employment in services than it did in the past.

8. See Szirmai (2012) and ADB (2013) for evidence and discussions.

9. Many large enterprises even had departments for running maintenance, security, restaurant, education, health, entertainment and housing services. ADB (2013) provides evidence on how growth of manufacturing stimulates growth of services



## II

Before embarking on a scrutiny of India's development experience during 1999/00-2011/12, it is worth taking a view of just how far India can and has to go on the road to industrialisation. This emerges very clearly from a comparison of India's level of industrialisation with that achieved by the dynamic developing economies of East and Southeast Asia (Table 3). In terms of industrialisation, India clearly lags far behind China, Indonesia, Malaysia and Thailand. These countries, not surprisingly, are also more developed (i.e., have significantly higher per capita GDP) than India. India's is a lower-middle-income non-industrialised service economy, which must now industrialise.

Table 3  
**Output and Employment Structure**

Country	Year	GDP per capita (2005 US\$)	Share (%) of manu- facturing in:		Share (%) of industry in:		Share (%) of services in:	
			GDP	Employment	GDP	Employment	GDP	Employment
China	2011	3122	31.8		46.6	29.5	43.4	35.7
Indonesia	2012	1735	24.0		46.8	21.7	38.7	43.2
Malaysia	2012	6786	24.2	17.5	40.8	28.4	49.1	59.0
Thailand	2012	3390	34.0	14.7	43.6	20.9	44.2	39.4
India	2012	1123	14.7	13.4	27.2	25.7	54.9	30.5

Source: World Bank (WDI database); Asian Development Bank (Key Indicators database); author's estimates (for India)

It is also to be noted that in these relatively advanced countries of East and Southeast Asia, services are far more labour-intensive than manufacturing or industry; this is what historical experience and economic reasoning (as discussed above) lead us to expect. The opposite, however, is true in India, where services are much less labour-intensive than manufacturing or industry. This seems a bit puzzling but also suggests that manufacturing-led growth has much greater potential of transforming the employment conditions in India than services-led growth.

In looking into India's development experience during 1999/00-2011/12, particularly into the employment effects of the rapid services-led growth, we need to reckon with the fact that India's economy has been and remains dualistic in structure. While it is immaterial if growth occurs in the organised sector or in the unorganised sector or in both (it would normally occur in both but would be faster in the organised sector), it is very material if employment growth occurs in the organised sector or in the unorganised sector. It is only the employment growth in the organised sector that is real or meaningful; employment growth in the unorganised sector, which is a reservoir of surplus labour, is no different from labour force growth and is a consequence of employment growth in the organised sector, given the labour force growth in the economy. Improvement of employment conditions in India requires transfer of labour from the unorganised sector to the organised sector, which can happen only when the rate of growth of organised sector employment exceeds that of the labour force in the economy.

The data in Table 4 bring to light two important aspects of the growth experience during 2000-2012. First, the services-led growth of the period seems to have reflected the services-

led growth of the unorganised sector. In the organised sector, manufacturing and services recorded equally rapid growth. Growth in the organised sector could still be called services-led since the contribution of services to overall growth of the sector was much higher than that of manufacturing for the simple reason that the share of services in output (50 per cent) was much larger than that of manufacturing (14 per cent) already in 1999/00. But the growth performance of organised manufacturing could not be called poor. It was the growth performance of unorganised manufacturing that was poor, much poorer than that of unorganised services.

It is in fact quite remarkable that unorganised non-agriculture grew almost as fast as organised non-agriculture. And this is explained basically by the fact that unorganised services grew even faster than organised services. These are features that have remained largely unnoticed and hence unstudied.<sup>10</sup> What explains this kind of rapid growth of unorganised services? It seems likely that the growth of both organised manufacturing and organised services during the period stimulated growth of unorganised services. Splintering, to the extent that it has occurred in manufacturing enterprises in the organised sector, appears to have contributed to growth of unorganised services (rather than of organised services). And the growth of organised services also appears to have boosted growth of unorganised services through supply and demand linkages.<sup>11</sup>

Table 4  
Growth of Output and Employment, 1999/00-2011/12

		<i>Average annual rate of growth (%)</i>		<i>Employment elasticity</i>
		<i>NDP</i>	<i>Employment</i>	
Economy	Manufacturing	7.2	3.0	0.417
	Construction	8.4	8.5	1.012
	Industry	6.9	4.9	0.710
	Services	8.7	2.9	0.333
	Non-agriculture	8.4	3.8	0.452
	All sectors	6.9	1.5	0.217
Organised sector	Manufacturing	8.6	5.9	0.686
	Construction	7.1	12.5	1.761
	Industry	7.1	7.0	0.986
	Services	8.5	4.4	0.518
	Non-agriculture	8.3	5.5	0.663
	All sectors	7.7	5.4	0.701
Unorganised sector	Manufacturing	4.1	1.7	0.415
	Construction	9.2	7.8	0.848
	Industry	6.7	4.1	0.612
	Services	8.9	2.4	0.270
	Non-agriculture	8.3	3.1	0.373
	All sectors	6.4	0.8	0.125

Source: Author's estimates based on National Accounts Statistics and data from the National Sample Survey of Employment and Unemployment.

10. Ghose (2014) notices the features but does not try to probe.

11. As examples of supply linkages, we can think of computer maintenance or mobile phone services. On the demand side, incomes generated in organized services create demand for services of domestic workers, cleaners, gardeners, drivers, guards, and so on.

Second, contrary to a widespread perception, growth during 1999/00-2011/12 has not been jobless at all. Growth of organised manufacturing has in fact been employment intensive.<sup>12</sup> Even the growth of organised services has been quite employment intensive, though less so than organised manufacturing. And the growth of organised construction has actually been much too employment intensive. It is in the unorganised sector that the employment intensity has been low. But this should be good news. For, employment in the unorganised sector (which is a reservoir of surplus labour) is in the nature of a residual. The low employment growth in the unorganised sector simply reflects the combined effect of rapid employment growth in the organised sector on the one hand and the relatively slow growth of the labour force (at 1.5 per cent per annum) in the economy on the other. Overall employment conditions clearly improved very substantially as (i) workers moved from low-productivity employment in the unorganised sector to higher-productivity employment in the organised sector, and (ii) labour productivity in the unorganised sector recorded impressive growth both because output growth was impressive and because employment growth was low (as labour was pulled out by the organised sector).

The impressive employment growth in the organised sector was associated with important changes in the composition of employment (Table 5). First, a general trend was what has often been referred to as “informalisation of employment in the formal sector”. The share of regular-formal employees (regular wage employees with entitlement to some forms of social security) in all employees declined while the share of regular-informal employees (regular employees without entitlement to social security) increased. It should not be thought, however, that regular-formal employment declined in absolute terms; this actually recorded a growth of 3.3 per cent per annum, which was significantly higher than the growth of labour force (1.5 per cent per annum) in the economy. But regular-informal employment grew much faster, at 9.3 per cent per annum. Second, regular-formal employment dominates only in organised services, which employ the bulk of the regular-formal employees. Services accounted for 75 per cent of total regular-formal employment in organised non-agriculture in 1999/00 and for 74 per cent in 2011/12. In contrast, manufacturing accounted for just 18 per cent of regular-formal employment in organised non-agriculture in both periods. Third, casual employment grew in importance only in organised construction where it has always been dominant.<sup>13</sup>

The status-composition of employment is a good indicator of skill-composition of employment. The average level of education (a proxy for skill level) is high for regular formal employees, lower for regular-informal employees and lowest for casual employees.

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12. Several studies have shown the growth of organised manufacturing to have been jobless in the past. See, for example, Kannan and Raveendran (2009), which shows the growth of organised manufacturing to have been jobless over the long run (1980/81-2004/05). A more recent study, Goldar (2013), however, shows that the growth of organised manufacturing since 1999/00 has been employment-intensive.

13. Several authors have noted that labour-intensive manufacturing industries actually grew at a slower pace than capital- and skill-intensive industries. See Kapoor (2014) and Goldar (2011, 2013), for example. The changes in the composition of employment, therefore, had little to do with changes in the composition of industries. Indeed, Goldar (2011) shows that growth of contract labour was more significant in capital- and skill-intensive industries than in labour-intensive industries.

Table 5  
**Distribution of Employment in Organised Industries by type (percentages)**

		<i>Regular- formal</i>	<i>Regular- informal</i>	<i>Casual</i>
Organised manufacturing	1999/00	42.5	33.0	24.5
	2011/12	31.6	49.3	19.1
Organised construction	1999/00	11.5	11.1	77.4
	2011/12	7.0	11.8	81.2
Organised industry	1999/00	40.8	26.6	32.6
	2011/12	28.0	36.1	35.9
Organised services	1999/00	76.7	18.8	4.5
	2011/12	66.0	30.8	3.2
Organised non-agriculture	1999/00	63.0	21.8	15.2
	2011/12	48.8	33.2	18.0

*Source:* Author's estimates based on data available from National Sample Survey of Employment and Unemployment.

In 2012, for example, an average regular-formal employee had 12.7 years of education, an average regular-informal employee had 9.4 years of education and an average casual employee had 4.4 years. The data in Table 5 thus tell us (i) that the proportion of the low-skilled among employees in the organised sector has been increasing, (ii) that organised manufacturing employs proportionately more low-skilled labour than organised services, and (iii) that organised construction is intensive in low-skilled labour.

Since the wage rate varies directly with the level of education,<sup>14</sup> a change in the status-composition of employment also indicates a change in the average wage in an industry. So the data in Table 5 tell us (i) that the changing skill-composition has had the effect of restraining wage growth in organised non-agriculture in general, (ii) that the average wage is higher in organised services than that in organised manufacturing, which in turn is higher than that in organised construction, and (iii) that wage growth was most restrained in organised construction (and thus in organised industry). All this is explicitly shown by the data in Table 6.

Table 6  
**Average Money Wage (Rupees) per Employee Per Day**

	<i>Actual (ac)</i>		<i>Hypothetical (hyp)</i>	<i>Ratio: ac to hyp</i>
	<i>1999/00</i>	<i>2011/12</i>	<i>2011/12</i>	<i>2011/12</i>
Organised manufacturing	139	359	400	0.898
Organised construction	77	185	208	0.889
Organised industry	133	325	384	0.846
Organised services	189	525	570	0.921
Organised non-agriculture	168	435	499	0.872

*Note:* Hypothetical average wage is the average wage that would have been paid had the status-composition of the employees remained unchanged.

*Source:* Author's estimates based on data available from National Sample Survey of Employment and Unemployment.

14. In 2012, average money wage per day was Rs. 676 for regular-formal employees, Rs. 243 for regular-informal employees and Rs. 134 for casual employees.

The main points can now be summarised. First, organised services are rather skill-intensive in India. In comparison, organised manufacturing is not only more employment-intensive but also is a far more significant employer of low-skilled labour. Hence a transition from services-led growth to manufacturing-led growth would both increase the rate of growth of organised sector employment and generate more employment for low-skilled labour (which would mean speedier transfer of labour from the unorganised sector). Moreover, accelerated manufacturing growth would also require accelerated growth of organised construction, which again would mean speedier transfer of low-skilled labour from the unorganised sector.

Second, even in a period of rapid services-led growth, organised manufacturing actually recorded impressive growth. A transition to manufacturing-led growth would naturally require achievement of even higher growth of organised manufacturing. The recent experience suggests that this is perfectly feasible.

Third, for a long period in the past, growth of organised manufacturing had remained jobless. There has been a big change in this respect. During 1999/00-2011/12, growth of organised manufacturing was employment-intensive.

Fourth, the general trend towards “informalisation of employment” in the organised sector was what increased both the employment intensity of growth and the access of low-skilled labour to jobs in the organised sector. It helped increase the employment intensity of growth because it increased flexibility of labour use and restrained wage growth.<sup>15</sup> And we are unlikely to be wrong in assuming that low-skilled labour does not have access to regular-formal employment. But for the “informalisation”, therefore, low-skilled labour would not have gained significant access to employment in the organised sector.

It is true that the “informalisation of employment” implied deteriorating quality of employment in the organised sector, which seems undesirable. However, during the period under study, deteriorating quality of employment in the organised sector did not mean deteriorating quality of employment in the economy. There was substantial movement of low-skilled labour from low-productivity, low-wage jobs in the unorganised sector to higher-productivity, higher-wage jobs in the organised sector. The output per worker in organised manufacturing was nearly 5 times that in unorganised manufacturing in both 1999/00 and 2011/12. In 2011/12, the wage per day for a regular-informal employee was nearly 30 per cent higher in the organised sector than in the unorganised sector. In the same year, the wage per day for a casual employee in the organised sector was 23 per cent higher in the organised sector than in the unorganised sector. The movement of low-skilled labour from the unorganised to the organised sector, therefore, both enhanced growth (by increasing average labour productivity in the economy) and improved the employment conditions, not just of those workers who moved but also for those workers who did not move (because the movement helped increase labour productivity in the unorganised sector).

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15. This did not mean wage decline for any category of employees. The real wage per day increased at an annual rate of 3.3 per cent for regular-formal employees, 1.2 per cent per annum for regular-informal employees and 1.5 per cent per annum for casual employees.

### III

There are three weighty reasons why India must now aim for rapid manufacturing-led growth.<sup>16</sup> First, rapid services-led growth is no longer feasible because it cannot but generate inflation and unsustainable trade deficit. Second, India's current level of industrialisation is much too low so that the scope for industrial expansion is large. Third, rapid manufacturing-led growth is what can bring about transformation of employment conditions in the country.

In concrete terms, rapid manufacturing-led growth implies double-digit growth of organised manufacturing. It is with this objective in view that we must consider the factors that act as constraints on growth of organised manufacturing so that policies can focus on removing them.

We also need to note here that even though organised manufacturing recorded impressive growth during 1999/00-2011/12, it also acquired certain fragility. This is what is reflected in the fact that growth of manufacturing collapsed after 2011/12; the rate of growth was very low (1.1 per cent) during 2012/13 and negative (-0.7 per cent) during 2013/14.<sup>17</sup> As a matter of fact, throughout 1999/00-2011/12, manufacturing was steadily losing competitiveness. Two developments indicate this. First, the share of imported inputs in total inputs used in production was steadily growing.<sup>18</sup> Second, net export of manufactures, which had been positive and significant, turned negative in 2005 and the deficit grew rather rapidly in subsequent periods. As percentage of manufactures exports, the trade balance in manufactures went from 11.4 in 1999/00 to -1.7 in 2004/05, to -30.7 in 2009/10 and to -14.4 in 2011/12. Underlying this development was the growing import intensity of exports. These facts also provide a backdrop for discussion of constraints.

What, then, are the constraints? Many studies as also some enterprise surveys have sought to answer this question. One well-recognised problem is that of inadequacy and poor quality of physical infrastructure (power supply, transport networks, ports and airports).<sup>19</sup> This has effectively meant supply bottlenecks and high costs of critical infrastructure inputs (electricity, transport, etc.) into manufacturing. Of late, availability and cost of land, which can be counted as part of physical infrastructure, have also emerged as major problems.

Another well-recognised problem is the poor quality of business regulatory environment. India regularly ranks very low among the countries ranked by the World Bank's "ease of doing business index". Enterprise surveys also generally show, that in entrepreneurs' assessment,

16. Policy makers in India recognize the need for rapid growth of manufacturing. Currently, the target is to boost the share of manufacturing in GDP from 15 to 25 per cent.

17. Again, these observations derive from the older series of national accounts. The new series show much higher growth of manufacturing in the post-2011/12 period: 6.2 per cent in 2012/13 and 5.3 per cent in 2013/14. Once again, we do not know the growth in the period 1999/00-2011/12 and hence cannot tell if and to what extent there was a slowdown in manufacturing growth.

18. Goldar (2012) estimates this share increased from 12 per cent in 1993/94 to 28 per cent in 2005/06. This led to a decline in the share of value added in output value – a phenomenon called "hollowing out" – as noted by Banga (2014).

19. Most enterprise surveys show the infrastructure constraint to be the most binding. See, for example, World Bank (2004), ICRIER (2007) and IHD (2014). Studies based on secondary data have also generally found infrastructure bottlenecks to be a major constraint. See, for example, Gupta, Hasan and Kumar (2007) and Kapoor (2014).



business regulatory environment (including tax issues) ranks high in the list of problems.<sup>20</sup>

Availability of skilled manpower is often mentioned as a constraint in the literature. It remains rather unclear, however, in what way this works as a constraint. We have argued above that one of the strengths of manufacturing (in the context of India) is that it can absorb much low-skilled labour. Many of the required skills in manufacturing can be easily acquired on-the-job. Some high-skilled engineers, technicians and managers are undoubtedly required to build and run manufacturing enterprises. It has been argued that, in India, services have lured away such high-skilled labour so that manufacturing faces shortage and high costs.<sup>21</sup> But this is a hypothesis that needs verification. And we need to ask why there is no market response.

An important problem, it is widely held, is posed by India's labour regulations, which allegedly make flexible use of labour by firms very difficult by making retrenchment very costly, if not impossible.<sup>22</sup> The regulations, therefore, arguably generate strong incentives for substitution of capital for labour. It has also been contended that they have been at least partly responsible for the phenomenon of "the missing middle" in Indian manufacturing (in which enterprises tend to be either very large or very small), which constrained growth of manufacturing.<sup>23</sup>

There are many problems with these arguments. They contend that labour regulations constrain employment growth, not that they constrain growth of manufacturing. As we have seen above, however, growth of manufacturing during 1999/00-2011/12 was employment intensive. The evidence also shows that flexibility is very much there in practice; there is widespread use of regular-informal and casual employees in the organised sector. Moreover, bulk of the most rigid form of employment – regular-formal employment – is to be found in services and not in manufacturing; yet we never hear the argument that labour market rigidity has constrained employment growth in organised services. While many economists believe that the labour regulations pose a serious constraint, entrepreneurs do not appear to think so; enterprise surveys show that most entrepreneurs view labour regulations as a minor problem.<sup>24</sup> And phenomenon such as that of 'the missing middle' can have other explanations: support for small-scale industry and reservation of products for production by small enterprises, for example.

All this is not to say that all is well with the labour regulations; these are much too numerous, complex and even ambiguous.<sup>25</sup> They do require reforms. But a narrow focus on rigidity or manufacturing is not very helpful in designing appropriate reforms or an overall industrial policy.

Finally, it is sometimes argued that lack of integration into global value chains in manufacturing has held back industrialisation in India. It cannot be disputed that India would

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20.Cf. World Bank (2004), ICRIER (2007), and IHD (2014).

21.The point was made by Rajan and Subramanian (2006), who christened the problem "the Bangalore bug".

22.The focus generally is on the Industrial Disputes Act, certain provisions of which make retrenchment difficult and closure of enterprises near-impossible. See World Bank (2010); Gupta, Hasan and Kumar (2007) and Kapoor (2014).

23.Cf. Mazumdar and Sarkar (2013).

24.See World Bank (2004), ICRIER (2007) and IHD (2014).

25.See Sharma (2006) and World Bank (2010) for relevant discussions.

have derived substantial benefits had it been able to use integration into global value chains for industrialisation the same way as China did. But that bus has been missed. Meanwhile, technological change has been changing the logic of global value chains by reducing the importance of labour-intensive tasks thereby lowering the comparative advantage of cheap-labour-locations. Indeed, because the technological innovations (3D printing, computer intelligence, industrial robotics, and so on) are occurring in developed countries, it is quite possible that these countries will regain comparative advantage in the production of many manufactures.<sup>26</sup> We may have to think in terms of domestic value chains and comparative advantage in final products once again.

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<sup>26</sup>. See ADB (2013) and McKinsey (2012, 2013) for discussions.



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