Rural–Urban Linkages in Bihar
Manufacturing Sector and Jobs for Unskilled Labour

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The growth of the manufacturing sector is important for employing a growing labour force and much is also dependent on their skill level. Enterprise surveys in six sample towns of Bihar, a state characterised by slow industrialisation and urbanisation, find evidence of fairly strong rural–urban linkages for manufacturing enterprises. Although the linkages indicate that the manufacturing sector has the maximum potential to create employment by absorbing the surplus labour in the rural areas, it was found that this sector has been languishing in the sample towns. The findings also flag the challenges and areas of growth for industries.

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The demographic dividend in India has largely been viewed as a promise for the country (Bloom 2011; Aiyar and Mody 2011). The magnitude of the issue can be gauged from the estimate that about a quarter of the projected increase in the global population aged 15–64 years between 2010 and 2040 is estimated to occur in India (Aiyar and Mody 2011). The increase in working age ratio would imply the addition of just over 30 crore working age adults. Another estimate projects the youth population (15–29 years) in India to reach around 38.4 crore by 2026 (Krishnamurty 2015). The dependency ratio is slated to decline from 59.6% in 2012 to 50.8% by 2026.[1]

This dividend, however, can be realised only if working age people are productively employed. It has been felt that India is likely to benefit from a fairly broad window of opportunity with the lowest dependency ratio of 46 per 100 working age persons occurring around 2040 (Joe et al 2015). But, there are certain prerequisites for countries to leverage its demographic dividend, such as health, education, and skills of children, adolescents and youth, as well as general productivity of the youth (Majumder 2013). Jobless growth and even decline in employment in the country is a major concern (Azim Premji University 2018). Overall, as things stand, India has an oversupply of unskilled/low-skilled workers and a shortage of skilled workers. Skill development efforts and recent government initiatives such as "Make in India" aim at productively absorbing the available labour force.

Industrialisation, with a focus on manufacturing, has traditionally been the route to economic growth for many developed countries in the West and some countries in East Asia, but it is the service sector that has emerged as the driver of growth among the South Asian countries, including India, over the last 25 years (Ghani and Kharas 2010). Given that service-led growth has usually been associated with educated and skilled workers (Dahlman 2010), the manufacturing route appears superior in the Indian context since this sector has been able to productively absorb the surplus low-skilled labour released from agriculture (Ghose 2014).

But even the nature of the manufacturing sector needs some change for it to productively act as a sector leading to economic transformation in India (GoI 2015). Considering the manufacturing and sub-sectors within services to assess their potential as a vehicle for transforming the Indian economy, it has been felt that within manufacturing, it is the formal or the registered manufacturing sector that has some of the requisite characteristics.[2] However, these manufacturing processes would

need skilled workers and not low-cost, unskilled labour, which India has in abundance. While the construction sector uses such labour, this sector would not be suitable as a transformative sector due to its lack of tradability and productivity issues.

There has been evidence of a decline in the agricultural workforce in India in the second half of the 2000s (Mehrotra et al 2014). Although the total workforce between 1993–94 and 2011–12 increased from 37.4 crore to around 47.42 crore, the workforce in agriculture witnessed a decline from 24.15 crore to 23.19 crore during this period. After an initial rise since 1993–94, the decline in agricultural workforce came in 2004–05, and it was absorbed to a great extent by non-agricultural activities (Mehrotra et al 2014). The urbanisation process has traditionally been associated with industrialisation. An urban centre in India is defined, among other criteria, in terms of the share of male population engaged in non-agricultural activities.[3] The labour that is unemployed or underemployed in rural areas can be absorbed in urban areas with the provision of productive employment opportunities. The urban centres can work as a pull factor for nearby rural areas through rural–urban linkages, giving an opportunity for the absorption of workers. They can also provide growth impulses to the rural hinterland through backward and forward material linkages, particularly for manufacturing.

Context of Urbanisation for Bihar

Urbanisation has been slow in India, increasing from 25.5% in 1991 to 31.2% in 2011 (Office of the Registrar General and Census Commissioner 2011). The diversity in the Indian urban landscape, however, is apparent as we see a range from small urban settlements to megacities. At present, the census has six size classes for urban centres: (i) Class I (population 1 lakh and above), (ii) Class II (population 50,000–99,999), (iii) Class III (population 20,000–49,999), (iv) Class IV (population 10,000–19,999), (v) Class V (population 5,000–9,999), and (vi) Class VI (population below 5,000). Some of the urbanisation during the last decade has been attributed to the fact that the new census towns[4] account for almost 30% of the urban growth in the last decade, with large interstate variations (Pradhan 2012). While some new census towns are concentrated around million-plus cities, more than four-fifths are situated outside the proximity of such cities, indicating a dispersed pattern of in-situ urbanisation. Thus, rather than new towns coming up, in a sense some hitherto rural areas have been "recognised" as towns.

Bihar is characterised by low urbanisation and industrialisation. It is also the state with the highest population density in the country at 1,106 people per square kilometres (sq kms). The high fragmentation of land, a large number of people depending on agriculture for livelihood, and the poor economic base in the state have led to migration as a survival strategy, and remittances today comprise a major source of earnings for the people there.[5] Urbanisation in Bihar presents a paradoxical situation in the sense that it is a state which has posted relatively high rates of economic growth in the last few years and yet has a very low urbanisation rate. Many villages in the state satisfy the first two criteria of the definition of urbanisation, but since

Bihar is a predominantly agriculture-based economy, these villages do not satisfy the third criterion of three-fourths of males working in non-agricultural sectors. Thus, in the absence of a strong non-agricultural sector, despite a large population and a high population density, the urbanisation rate in Bihar is just 11.3% as of 2011, vis-à-vis 31.2% for all India.[6]

The pattern of urbanisation in Bihar is not uniform, with south Bihar considerably more urbanised than the north and urbanisation overwhelmingly concentrated in large cities. A comparison of data for two successive census rounds shows that Class I towns accounted for about 59.3% of the total urban population of the state in 2001, and the share declined very slightly to 57.5% by 2011 (Tables A1 and A2, p 59). The number of all classes of towns increased during the decade, and there is a remarkable increase in the number of Class V towns from three in 2001 to 38 in 2011. In addition, there are nine Class VI towns in 2011. While some of the increase in the number of towns between the two census periods can be attributed to the reclassification as "census towns," the fact remains that Class I towns continue to dominate the urban population, while Classes II and III towns together have a stagnant share of urban population. While the number of very small towns has increased sharply, together Classes V and VI towns account for just 2.5% of the population in the state.

Small and medium towns (SMTs) have been regarded as an alternative option for economic and social development, specifically as a counterpoint to the concentration of high-end livelihood opportunities, economic and social infrastructure development, etc, in large cities and metropolises. This categorisation is based on an earlier classification used in the National Sample Survey 1987–88 (43rd) and 1987–88 (50th) rounds (Mahadevia and Sarkar 2012): (i) small towns (size Class 4 [C4]; population up to 50,000), (ii) medium towns (size Class 3 [C3]; population 50,000–2,00,000), (iii) large cities (size Class 2 [C2]; population 2,00,000–10,00,000), and (iv) metropolitan cities (size Class 1 [C1]; population more than 10 lakh). SMTs, that is, the towns with population up to 2 lakh, were conceptualised as a conduit for taking urban services to rural areas via rural–urban linkages and lead to some decentralisation in the process of development away from the larger cities (Minocha and Yadav 1989).

The 2001 Census data show that the relative concentration of urban population in Bihar in SMTs at 63.71% was much higher compared to the all-India average of 49.87% (Mahadevia and Sarkar 2012: 17). Comparing the data for population in different sizes and classes of towns for 2001 and 2011 Census and adding the population in towns with 1–2 lakh population for the 2011 Census, it is estimated that even in 2011, the share of urban population living in SMTs[7] is 56.6% of the urban population in the state, underscoring the need for a close look at the urban development in such towns, although the experience of using SMTs for decentralisation of development has not been very successful.[8]

In the present study, we look at urban development in cities/towns of different size-classes in Bihar to explore the sources of urban output and growth as well as rural–urban linkages there, both in terms of employment and input–output, with the help of detailed enterprise surveys. With respect to the typologies

discussed, the study covers selected Classes I, II, and III towns and alternatively, selected large, medium, and small towns and a metropolitan city. The findings indicate that although the manufacturing sector shows the strongest rural–urban linkages compared to other sectors, making it the sector with the maximum potential to create employment for absorbing the surplus labour in the rural areas, this sector has been languishing in many of the sample towns.

The Survey

Six towns were covered in the enterprise surveys; three each from south and north Bihar. The regional disparity in the state, which is skewed favourably towards the south and particularly in favour of the capital Patna, is reflected in the per capita gross district domestic product (PCGDDP) for 2011–12 at 2004–05 prices. The PCGDDP was ₹63,063 for Patna, ₹12,561 for Nalanda, ₹10,932 for Darbhanga, and ₹9,241 for Madhubani districts (Government of Bihar 2017). Within each region, three towns were selected on the basis of their size, location, main economy, level of economic development, proximity to rural centres, and large urban centres.

From the southern part, three towns—Patna (population 16.84 lakh) and Bihar Sharif (2.97 lakh; both Class I towns) and Hilsa (population 0.51 lakh; a Class II town)—have been purposively selected. From north Bihar, Darbhanga (population 2.96 lakh; a Class I town), Madhubani (population 0.76 lakh; a Class II town), and Jhanjharpur (a Class III town with population 0.31 lakh) have been selected. Patna is the largest city in the state and an outlier vis-à-vis the other towns; Darbhanga and Bihar Sharif are comparable, while the smaller towns of Jhanjharpur and Hilsa are also comparable in size.

Patna, the capital city, is the centre for development in Bihar and cannot be compared to any other town in the state. Bihar Sharif, located at a distance of around 80 kilometres (km) from Patna, is also a growing town and there are strong linkages between the two towns. Both towns have some presence of manufacturing activities, although Bihar Sharif has witnessed a decline in its industrial activities over time. In contrast, Madhubani, Jhanjharpur, and Darbhanga are market towns; especially Darbhanga, which is a trading hub, and these towns are highly connected with one another as well as with surrounding rural areas. Manufacturing activities present in these towns are small-scale in nature, with the exception of some brick kilns near Madhubani, which are registered as factories. The two sets of towns in southern and northern regions of Bihar belong to districts with very different urbanisation rates. Urbanisation rates in Patna (43%) and Nalanda (15.9%) districts where Patna, Bihar Sharif, and Hilsa fall are comparatively much more than Madhubani (3.6%) and Darbhanga (9.7%) districts (Madhubani, Jhanjharpur, and Darbhanga towns belong to these two districts).

Data and Methodology

The study was conducted with the help of both primary and secondary data. The secondary sources include the Census of India, the Annual Survey of Industries, the Economic Census, the district-level business register, and other secondary data

were collected from the state government. Primary data collection was based on a sample survey conducted in the six selected towns. The enterprise surveys were conducted in the factories, shops, and establishments in the sample towns during the months of August–November 2015. A pilot was conducted during July 2015 and this was followed by the full survey. The number of enterprises covered in the survey conducted was 907, of which 31 are registered under the Factories Act, 1948.

Focus group discussions (FGDs) and in-depth interviews were conducted within the different settlements and also in industrial settings, corporations, and with municipality staff, in order to collect and understand perceptions regarding development, changes in labour markets, employment opportunities, challenges to expansion and growth, etc. Consultations and interviews with key informants and local urban administrators, state government officials, local resource persons, and officials from various other institutions, such as chambers of commerce, were also held. Also, consultations were held with the owners of some factories and enterprises to know their perspectives on linkages of industry and enterprises, as well as the main hurdles they face.

Sampling methodology: For the enterprise survey, lists of all the factories and shops/establishments were collected from two different sources. The list of enterprises (other than registered factories) was collected from the Department of Industries, Government of Bihar, and the town-wise list of factories was collected from the Annual Survey of Industries, 2014–15. In the business register, the unit-level information such as name of establishment, owner of establishment, locality, area in which the enterprise is located (rural or urban), and the registration number are provided for the district. From the list of enterprises, the town-level enterprises were segregated by looking at the address of each and every enterprise. All the enterprises were classified into 19 broad activity categories for each town (Table A3, p 59).

The stratification of the shops/establishments was done on the basis of broad groups of shops/establishments given in Table A3. Among each group, a proportionate sample was drawn. The list of factories for selected towns was collected from the Annual Survey of Industries, 2014–15. This list contained information for district name, unit name, industry code, address of the unit, total persons engaged, and location of unit. From this list, those units that are within 15 km distance from the sample towns were identified. From those selected units, the units were picked proportionately. However, as the size of factories is much larger compared to the average size of establishments, these were oversampled.[9]

At the time of describing the activity of an enterprise as manufacturing, trading, other services, etc, it was observed that some units combined services and trading, such as the enterprises that sell motor parts, pump sets, cycles/motorcycles, cycle tyres and parts, motorcycle parts, etc, and also provide repairing services for the same. Such enterprises have been categorised as services and trade units. Out of the total 907 units surveyed in the six sample towns, the number of enterprises surveyed in each

town was: 314 in Patna, 151 in Bihar Sharif, 86 in Hilsa, 164 in Darbhanga, 106 in Mahubani, and 86 in Jhanjharpur.

Sources of Urban Output

Distribution of survey enterprises by activity: The pattern of distribution of enterprises by activity type across the six towns emerges as more associated with their size than with any distinct regional pattern (Table 1). Patna is the most important source of urban development in Bihar and, according to many industry informants, the only source. The distribution of enterprises in Patna is distinct from other towns, with both manufacturing (37.6%) and trade (33.4%) dominating the activities, followed by other services (22%).[10] Bihar Sharif and Darbhanga are similar in size and have trade as the dominant activity, followed by manufacturing and other services. In Darbhanga, the share of manufacturing is lower compared to Bihar Sharif, but there are some factories, whereas there were no factories in the Bihar Sharif sample. Earlier, there were many cold storage units in Bihar Sharif, and the city used to be classified with manufacturing as one of the main economic activities. The cold storage units have since been reclassified as services since the units are just chilling and preserving fruits and vegetables, rather than being engaged in manufacturing a new product. Also, many cold storage units have closed down over the years.
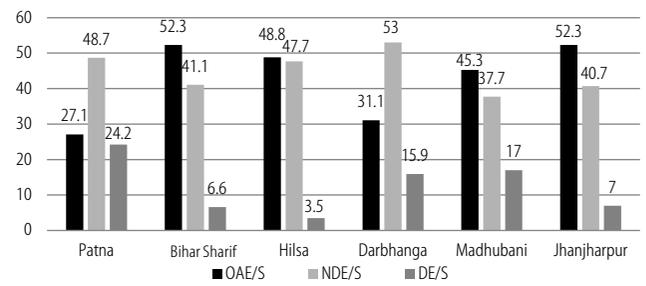
Hilsa, Madhubani, and Jhanjharpur—all relatively smaller towns—have manufacturing as a dominant activity, except for Madhubani, for which the sample has six brick kilns (located near the town) registered as factories, the rest is all small-scale manufacturing. The factory component for manufacturing is zero for Hilsa and Jhanjharpur and 5.7% for Madhubani (Table 1).

Figure 1: Distribution of Enterprises by Type of Enterprise/Shop

DE/S refers to directory enterprises.
Source: Same as Table 1.

The main manufacturing activities in Hilsa and Jhanjharpur are furniture-making, timber products, making steel products such as bins, and agro-processing. In Madhubani, too, these comprise the major manufacturing activities over and above brick kilns and food and beverages. None of the brick kilns surveyed in Patna were registered under the Factories Act, 1948.
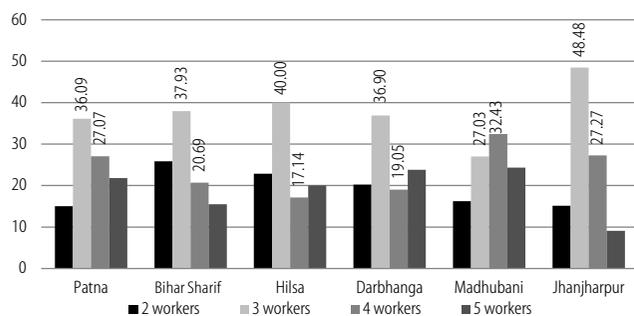
Trade/retail has the highest share of economic activities in Darbhanga and Bihar Sharif and the second highest share for Patna. It is also important in Hilsa, Madhubani, and Jhanjharpur, with around a quarter of surveyed enterprises engaged in these activities. The share of "other services" varies in the range of 18% to 25% across the six towns. The share of services and trade is uniformly low across the towns, but when combined with the category "other services," the share of service-related enterprises is close to 30% for most sampled towns.

Distribution of survey enterprises by type: The All India Report of Sixth Economic Census, 2013–14 considers two types of establishments: those without any hired workers and those with at least one hired worker. The former are referred to as "own account enterprises" (OAEs) and the latter is referred to as establishments, including the categories of "non-directory enterprises" (NDEs) and "directory enterprises" together.[11] The Sixth Economic Census indicates that the distribution of non-agricultural establishments in urban Bihar is dominated by establishments without hired workers (OAEs), with a share of 60.7% (MoSPI 2016). From the present study, the share of establishments without hired workers is found to be lower at 38.6%, but town-wise data reveal that the shares for OAEs are much higher at around 45%–50% or more for the SMTs (Figure 1). Only the larger cities of Patna and Darbhanga have lower shares for OAEs. The relatively high share of OAEs reflects the low scope for absorbing unskilled labour in the state.

Factory Sector

How important is the factory sector as a source of urban output? The factory sector comprised 31 establishments in the overall sample size of 907 in the six towns, indicating the poor progress of industrialisation in the state. The sector is dominated by manufacturing units (Table 1), and those surveyed are engaged in making wooden products, steel products, food and beverages, agro-processing, hardware, brick kilns, etc.

Patna is the hub for investment in large enterprises in the state, according to the survey data. There are establishments

Table 1: Distribution of Enterprises in Six Sample Towns by Activity

(number and %)

	South Bihar			North Bihar		
	Patna	Bihar Sharif	Hilsa	Darbhanga	Madhubani	Jhanjharpur
Number						
Manufacturing	118	41	45	19	49	47
Factory	15	0	0	4	6	0
Non-factory	103	41	45	15	43	47
Trade/retail	105	67	20	99	27	20
Other services	70	35	16	39	27	17
Factory	1	3	0	0	0	0
Non-factory	69	32	16	39	27	17
Services and trade	21	8	5	7	3	2
Factory	2	0	0	0	0	0
Non-factory	19	8	5	7	3	2
Total	314	151	86	164	106	86
Percentages						
Manufacturing	37.6	27.2	52.3	11.6	46.2	54.7
Factory	4.8	0.0	0.0	2.4	5.7	0.0
Non-factory	32.8	27.2	52.3	9.1	40.6	54.7
Trade/retail	33.4	44.4	23.3	60.4	25.5	23.3
Other services	22.3	23.2	18.6	23.8	25.5	19.8
Factory	0.3	2.0	0.0	0.0	0.0	0.0
Non-factory	22.0	21.2	18.6	23.8	25.5	19.8
Services and trade	6.7	5.3	5.8	4.3	2.8	2.3
Factory	0.6	0.0	0.0	0.0	0.0	0.0
Non-factory	6.1	5.3	5.8	4.3	2.8	2.3
Total	100.0	100.0	100.0	100.0	100.0	100.0

Source: Enterprise Survey conducted by the Institute of Human Development in 2015.

Figure 2: Distribution of NDEs by the Number of Workers

Source: Same as Table 1.

Figure 3: Distribution of Directory Enterprises by the Number of Workers
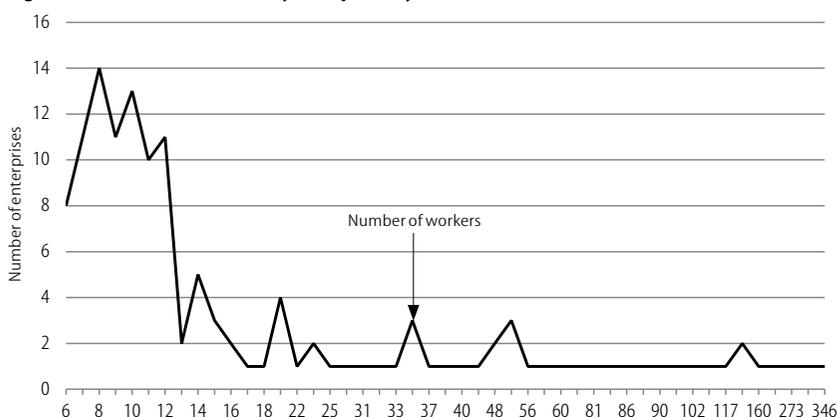
Source: Same as Table 1.

for wood products, food and beverages, household industry and handicraft, transport-related sales and services, books, clothing, etc, which have large shares. Madhubani has a 17% share of directory enterprises accounted for by nearby brick kilns, wood products, etc, and Darbhanga has nearly 16% share of directory enterprises with food and beverages, medical services (including hospital/nursing home, medical hall/medicine shop/x-ray), transport-related sales and services, and miscellaneous[12] accounting for a large share.

Among the 31 factories, majority (18) are in Patna, there are six brick kilns in Madhubani, four factories including two flour mills in Darbhanga, and three cold storage units in Bihar Sharif. The maximum numbers of hired workers are employed by a biscuit factory, brick kilns, polytube factory, cold storage units, paints factory, steel making units, etc. The scope for absorbing unskilled workers is the most in cold storage units and brick kilns. But in the former, the work is likely to involve a lot of casual labourers, such as for loading/unloading, which provides limited man-days of work. Brick kiln work is also unlikely to be available round the year, and as reported during the survey, some workers are brought in from outside the state as well so that local labour is not always employed for the work.

The high use of semi-skilled workers in the polytube factory, steel factories, and in some of the brick kilns indicates increasing mechanisation of processes, which would reduce the scope of using unskilled workers. A visit to a polytube factory near Patna showed the high level of mechanisation of the tube-making process. Even the steel-making units visited by the team showed a high degree of mechanisation as well as automation,

showing the future direction of such manufacturing activities. In contrast, the cold storage units, which do use the unskilled workers, are dwindling in number.

Distribution of survey enterprises by the number of workers employed: By definition, NDEs employ up to five workers (own and hired together). Figure 2 shows that the modal frequency for the total of 380 NDEs is for three workers and the next highest frequency is for four workers. For directory enterprises, the number of workers can be quite high and varies in the sample of 139 directory enterprises from six to 346 workers employed in an enterprise. However, more than half (56%) of the directory enterprises surveyed had 12 workers or less, that is, in the range of 6 to 12 workers (Figure 3). The highest frequency (14 enterprises) is for eight workers. If we consider the benchmark numbers for factories,[13] then we see that 36% of the enterprises have below 10 workers and 66% of the enterprises have below 20 workers. Indian entrepreneurs allegedly tend to keep the size of their enterprises small so as to avoid coming into the formal network of the Factories Act, 1948, which involves various labour regulations, mandatory benefits to be given to workers as well as inspection, taxation, etc. The overall small size of the sample for directory enterprises reflects this situation.

Rural–urban Linkages

Linkages via the labour market: Secondary data indicate that the percentage share of hired workers in total workers in establishments in urban Bihar averaged at around 46.66% in 2013, down from 57.5% in 2005 (MoSPI 2008, 2016). Compared to the Sixth Economic Census, the share of hired labour[14] in the present enterprise survey was found to be much higher (Table 2), especially for Patna and Madhubani. The share was calculated as a weighted average of the shares for directory enterprises and NDEs.

Between the two types of establishments that hire workers, the directory enterprises use more hired workers compared to the NDEs, with the latter having a much larger share in the number of units in the total sample of enterprises. The share of family workers is relatively high for Hilsa, Darbhanga, and Jhanjharpur, which have fewer directory enterprises.

Table 2: Share of Hired Workers in Establishments in the Six Sample Towns (%)

Town	Share of Hired Workers in Total Workers (Average)	Share of Hired Workers in Total Workers (Directory Enterprises)	Share of Hired Workers in Total Workers (NDEs)
Patna	77.30	94.8	64.9
Bihar Sharif	66.77	95.0	59.2
Hilsa	60.48	69.1	58.3
Darbhanga	64.94	91.0	56.4
Madhubani	73.92	96.6	61.7
Jhanjharpur	66.22	88.3	60.0

Source: Same as Table 1.

Figure 4: Share of Hired Workers from Rural Areas in Enterprises (%)
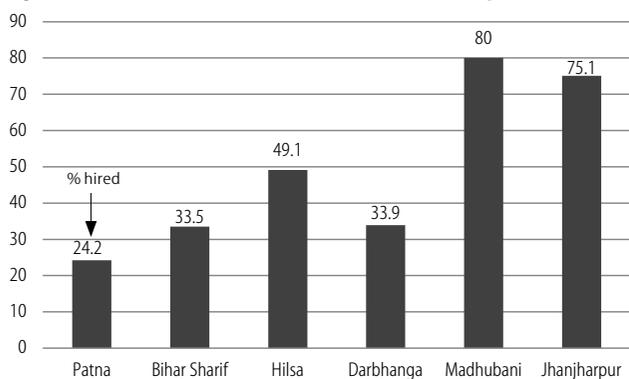
Source: Same as Table 1.

Hiring of workers from rural areas: The use of hired workers was reported by 553 establishments, which comprise around 61% of the total number of survey enterprises. Out of these, 530 enterprises provided detailed data on hired workers, among which 33.2% reported hiring workers from rural areas, usually along with workers from urban areas as well. This demonstrates fairly good linkages of the enterprises with the rural milieu. Of the 530 units that reported hiring workers, 73% are NDEs or smaller units and the rest are directory enterprise units. The share of hired workers commuting from rural areas is particularly high for directory enterprises at 53.9% vis-à-vis NDEs (24.7%). By activity, it is highest for manufacturing (41.5% of enterprises), followed by services (including services and trade) (33%), and the least for trade/retail enterprises (24%).

Of the 3,728 adult workers hired for the survey enterprises, nearly half (45.5%) are found to be travelling from rural areas (Table 3). The share of rural workers for directory enterprises is more than double that of NDEs. The town-wise picture in Figure 4 shows that the smaller towns of Madhubani and Jhanjharpur, followed by Hilsa, have very high rural–urban linkages, which is not surprising since Jhanjharpur and Hilsa in particular are very small towns having close connections with surrounding villages. Patna, the largest urban agglomeration

Table 3: Hired Workers among Enterprises and Sample Towns

	Hired Adult Workers (Current Year) from		Percentage of Hired
	Rural Area	Urban Area	Workers from Rural Areas
Type of establishment			
NDE	161	625	20.5
Directory enterprises	1,534	1,408	52.1
Towns/cities			
Patna	352	1,102	24.2
Bihar Sharif	80	159	33.5
Hilsa	56	58	49.1
Darbhanga	234	456	33.9
Madhubani	786	196	80.0
Jhanjharpur	187	62	75.1
Type of activity			
Manufacturing	1,267	675	65.2
Trade/retail	138	540	20.4
Other services	182	646	22.0
Services and trade	108	172	38.6
Total	1,695	2,033	45.5

Source: Same as Table 1.

in Bihar, has the weakest rural–urban linkages in the sense of rural workers coming in to work daily. Three-fourths of the workers here come from urban areas, but it is likely that people originally from rural areas have migrated and settled in Patna and the peripheries. The same phenomenon is likely to have taken place in Bihar Sharif and Darbhanga—towns with a substantial slum population.

Considering the type of activity, it is seen that manufacturing units clearly have the maximum link with rural areas, with 65.2% workers coming in from there. The share of rural workers in total workers is much less at 20%–22% for trade/retail and other services units.[15]

It may be recalled, however, that with the exception of Patna, most towns are characterised by very small-scale manufacturing and factories are located largely in Patna alone. Therefore, these are unlikely to be a vehicle for industrialisation in these towns and provide the rural–urban linkages pulling in rural workers in large numbers from the hinterland. The type of enterprises hiring relatively more rural workers are those making wooden products, miscellaneous activities, including brick kilns, real estate, poultry, petrol pumps, dealers in cement, cinema halls, transport-related sales and services, cloth shops and tailors, food and beverage enterprises, electrical and electronics enterprises, steel products, household industries, etc.

Backward and forward linkages: The rural–urban linkages are also manifested through backward linkages such as from where the raw materials/inputs of the enterprises are obtained and forward linkages such as where the products of the enterprises are sold. There was some evidence of backward linkage with rural areas, reflected in 14.6% of the enterprises reporting that they sourced their major input/intermediate product from rural areas within the district (Table 4).

Table 4: Source of Major Input for Types of Enterprises (% distribution)

	Within District (Rural)	Within District (Urban)	Outside District within State	Outside State	Outside Country
OAEs	11.0	89.0	10.0	3.0	0.0
NDEs	10.6	80.3	11.4	9.8	0.8
Directory enterprises	26.0	51.9	13.0	37.7	1.3
Total	14.6	76.1	11.3	14.6	0.6

Only for reporting units. The replies were multiple and row totals do not add up to 100.
Source: Same as Table 1.

Among the different types of activities, agro-processing activities have relatively higher share of sourcing of inputs from nearby rural areas. Urban areas within the district were found to be the major sourcing spot for all types of enterprises, but directory enterprises showed relatively more sourcing from local rural areas vis-à-vis OAEs and NDEs. Since many of the directory enterprises are engaged in manufacturing activities, it is seen that manufacturing units have a relatively strong backward linkage. Similarly, local urban sourcing is important for all the towns, but some variations were observed; in the smaller towns of Jhanjharpur, Madhubani, and Hilsa, sourcing of inputs from local rural areas was found to be relatively more compared to a big city like Patna.[16] Backward linkages were observed to be stronger for the factory sector vis-à-vis

the non-factory sector (Table 5). In terms of forward linkage, the survey findings showed that 62.5% of the 907 survey enterprises sell final products directly to consumers (Table 6).

All types of enterprises have local areas[17] as the major destination for their products (Table 7). Rural destinations comprise 27%–32% of the market. Among trade/retail units, transport-related sales/service enterprises and among services, institutions reported more sales in rural areas. Manufacturing units of food and beverages, household industry and handicraft, etc, exhibited stronger forward linkages with relatively more sales to local rural areas.

Table 5: Source of Major Input for Factory and Non-factory Sectors

(% distribution)

	Within District (Rural)	Within District (Urban)	Outside District within State	Outside State	Outside Country
Non-factory	13	80	10	11	1
Factory	35	30	26	57	0
Total	15	76	11	15	1

Only for reporting units. The replies were multiple and row totals do not add up to 100.
Source: Same as Table 1.

Table 6: Destination of Final Product (% distribution of multiple choice)

Unit Type	Wholesaler	Retailer	Both Wholesaler and Retailer	Directly to Consumer	Person Who Supplied the Inputs	Others
Manufacturing	7.2	26.0	22.6	59.6	4.7	3.1
Trading	3.0	42.6	9.8	53.3	0.9	0.9
Services	2.9	10.3	6.9	78.9	4.9	4.9
Service and trade	2.2	30.4	10.9	78.3	8.7	0.0
Grand total	4.4	28.9	13.7	62.5	3.5	2.5

Only for reporting units. The replies were multiple and row totals do not add up to 100.
Source: Same as Table 1.

Table 7: Market for the Final Product Produced/Sold in the Enterprise/Shop

(%)*

Unit Type	Local	Within State	National	Export	Total
Manufacturing	92.5 (27.3)	7.3	0.2	0.0	100.0
Trade/retail	98.5 (32.5)	1.5	0.0	0.0	100.0
Other services	97.5 (29.9)	1.5	0.5	0.5	100.0
Service and trade	97.8 (13.3)	2.2	0.0	0.0	100.0
Grand total	96.1 (29.1)	3.6	0.2	0.1	100.0

*Figures in brackets indicate percentage shares of rural market (within district).
Source: Same as Table 1.

The local destinations can have consumers both from the town itself as well as the rural inhabitants coming to town to buy these products. For instance, people come from rural areas to the town for buying garments, shoes, food, etc, as well as for medical treatment, education-related services, etc. With improved transport connectivity over time, such linkages of the rural areas with the nearby towns have increased. Many also watch movies in the cinema hall in the town, although this linkage is weakening due to competition from television. There is traffic in the opposite direction as well, such as ice cream vendors, utensil vendors, and the like peddle their goods in the nearby villages and in the town. Thus, there seems to be some evidence of forward linkage in the sample towns.

Growth and Bottleneck Areas

The previous section has established that among the different types of enterprise activities, the manufacturing enterprises have exhibited more rural–urban linkages, especially in terms of hiring rural workers. This section takes a look at the assessment of urban growth in the sample towns. This assessment was based on the perception of the respondents in the enterprises that have been operating for the last three years. Of the 866 units that have been operating for the last three years or more, a sizeable share of 37.8% reported that they were undergoing expansion (Table 8), but 29% of the units surveyed also reported that they were contracting. If those that have been stagnating and those undergoing contraction are clubbed, they account for a high share of around 62%, that is, nearly two-thirds. Activity-wise, for all enterprises taken together, trade units show the highest share of expansion (43.7%) and manufacturing shows the least (32.8%).[18] Thus, in parallel, manufacturing units have been facing the maximum contraction/stagnation.

Table 8: Status of Growth in the Last Three Years of Surveyed Enterprises in Six Sample Towns

	Expanding (%)	Stagnant (%)	Contracting (%)	Total Number
Manufacturing	32.8	33.4	33.8	308
Trade/retail	43.7	34.0	22.3	318
Other services	34.3	31.3	34.3	198
Services and trade	45.2	33.3	21.4	42
Total	37.8	33.1	29.1	866

Source: Same as Table 1.

While the smaller towns of Madhubani and Jhanjharpur also showed expansion in manufacturing units, the very small-sized manufacturing units in such towns would have limited scope for absorbing surplus labour from nearby rural areas. In Patna, where there are bigger manufacturing units, manufacturing enterprises along with services accounted for the most contraction. In Bihar Sharif and Hilsa, too, manufacturing units showed contraction during the last three years.

The high price of raw materials, shortage of finance and raw materials, and infrastructure-related problems are important bottlenecks for all types of enterprises. For directory enterprises and NDEs, raw material price is the most important challenge, while for OAEs, shortage of finance is the most pressing issue. Entrepreneurs flagged the topmost priority area as the need to expand availability of credit. This was followed by the need for improved electricity supply and bringing down the high prices of raw materials. Some of the bigger enterprises indicated difficulty in recruiting skilled workers. The law and order situation was earmarked as an area of improvement by many directory enterprises.

The survey findings indicated that over and above easing the availability of credit, capacity building is needed for the bank officials for processing loans of a large size. The screening procedure of loan applicants needs to be tightened to filter out the non-serious applicants, who do not intend to set up an industrial venture but are only interested in availing bank credit and are likely to turn defaulters. Improvement in the quality of electricity supply is needed, as well as the expansion of electric connections, and is one the major suggestions put forward by the entrepreneurs. Governance issues to be addressed include not only corrupt practices but also policy planning. Stability in government policy regarding approval

of projects, land allotment, loan approval, taxation structure, etc, is highly desirable.

Conclusions

The survey provides evidence of fairly strong rural–urban linkages for manufacturing enterprises in the sample towns, particularly in terms of hiring workers from nearby rural areas. There was evidence of some forward and backward input–output linkages; for the factory sector in particular, backward linkages are relatively strong. Thus, for the purpose of providing employment opportunities to unskilled labourers, the study showed maximum scope in the manufacturing units. However, many of the manufacturing units have either been stagnating or contracting in the sample towns, and only few of these have been experiencing growth. The factory sector was small in the survey towns, and factories were mostly concentrated in and around Patna. There were some instances where the rural–urban linkages were between the villages and faraway urban centres, including those outside the state and even outside India.[19]

The findings indicate that industrialisation and urbanisation in Bihar are entirely Patna-centric. Smaller towns and semi-rural areas exhibit signs of growth in terms of more *pucca* housing, construction activities, transport services, connectivity, availability of consumer goods, etc, but show little evidence of a sizeable industry coming up in a big way. Infrastructure—which had earlier been a crucial bottleneck—has been mitigated somewhat with improved road connectivity and electricity supply, but there are many remaining challenges. FGDs and in-depth interviews indicated that a factor impeding industrialisation in Bihar is the rising land price throughout the state. There is a high demand for land in this densely populated state, thereby leading to spiraling land prices. The high price acts as a prohibitive factor for new investment in greenfield industries.

Credit availability, overall industrial regulations, poor governance, and infrastructure-related issues, such as the quality of power supply, are also inhibiting factors for setting up industry, according to entrepreneurs. Since the manufacturing route is best suited for this populous state to absorb labour from the rural areas, this sector needs to be revitalised. In order to attain this, the government must provide a major thrust for setting up industries in different parts of the state to address the infrastructure and other bottlenecks and to incentivise the scale-up of industrial activities. The present study indicated a preference on the part of entrepreneurs to keep the firm size small, which needs to be countered.

While the process of industrialisation provides an avenue for absorbing unskilled labour, it also needs skilled labour. In order to retain skilled labour in the state, access to basic amenities such as education, health facilities, housing, etc, must be improved in the smaller towns. There is a need to establish skill development/training facilities for workers as well since some of the bigger enterprises indicated difficulty in recruiting skilled workers. The long-term need to skill the unskilled labour is very important, since unskilled labour even in the bigger industries is being replaced by semi-skilled and skilled labour at present.

The state government's Industrial Investment Promotion Policy, 2016 focuses on balanced regional development and underscores the provision of support infrastructure for industry (Department of Industries 2016). It also emphasises skill development and technical education to make Bihar the preferred source for a skilled workforce. The Bihar Start-up Policy, 2017 makes provisions for financial incentives and scale-up funds. These are steps in the right direction for this densely populated state and will provide the thrust needed for balanced regional growth of the labour-intensive manufacturing sector.

NOTES

1 The dependency ratio is defined as the proportion of 0–14 years plus 60 years and over population to population aged 15–59 years. The share of youth in working age population, however, is slated to actually decline by 2026.

2 In the *2014–15 Economic Survey,* five characteristics have been used to assess the transformational potential of a sector: high levels of productivity, rapid rate of growth in productivity, ability to attract resources, alignment with country's underlying resources, and tradability of the sector (GoI 2015).

3 A human settlement is called urban when it fulfils three criteria: (i) it has a minimum population of 5,000, (ii) it has a population density of at least 400 per sq km, and (iii) it has 75% of the male population working in non-agricultural sector. Such activities, apart from manufacturing, can include construction, trade, and service-related activities (Census 2011).

4 Census towns are distinct from statutory towns; the latter are administratively declared urban areas by a state law, which includes all manner of urban local bodies, such as municipalities, town panchayats, and cantonment boards. The census towns, in contrast, are complete settlements declared as towns by the Registrar General of India on the basis of three urban characteristics as mentioned in note 3. A third type of urban area are the "outgrowths," which

are viable units that emerge adjacent to, but outside the administrative limits of statutory towns. These are, however, not complete settlement units like an entire village. Some examples are railway colony, university campus, port area, military camps, etc, which have come up near a statutory town outside its statutory limits but within the revenue limits of a village or villages contiguous to the town (Census 2011).

5 For details, see Rodgers et al (2013).

6 However, some of the higher urbanisation has been attributed to a larger number of "census towns," which is a result of reclassification of rural settlements into census towns (Pradhan 2012).

7 This includes a part of the Class I cities.

8 Developing countries have not been very successful in reshaping city-centric urban development and making it more widespread and taking it to the SMTs (Hardoy and Satterthwaite 1986).

9 This was done following consultations with a deputy director at the Ministry of Statistics and Programme Implementation for sampling procedure. He indicated that as the size of factories is much larger compared to the average size of establishments, these were oversampled.

10 Some enterprises, which combine service and trade activities, have been categorised as service and trade units. However, such enterprises are small in number.

11 An enterprise, which is usually run without the help of any hired worker employed on a

fairly regular basis, is defined as an OAE. The directory enterprises are those that employ six or more workers (household and hired workers taken together) of whom at least one hired worker is employed on a fairly regular basis. The NDEs refer to enterprises that employ less than six workers (household and hired workers taken together), of whom at least one hired worker is employed on a fairly regular basis.

12 "Miscellaneous" here includes petrol pumps, cinema halls, cement/coal/gas dealers, brick kilns, real estate, etc.

13 Factories refer to manufacturing activity being carried on with 10 or more workers with electricity or 20 or more workers working without the aid of electricity, with some exceptions such as mining, hotels and restaurants, etc.

14 Considering only adult hired labour, the share of child labour was found to be quite low at 0.5%.

15 The services and trade enterprises are relatively much smaller in number.

16 Data not presented here.

17 We have taken rural and urban destinations within district as local destinations for products.

18 Here, we disregard the services and trade units, which are small in number.

19 For instance, this was found to be true for Madhubani paintings and artefacts in a cluster of villages in Madhubani district.

REFERENCES

Aiyar, Shekhar and Ashoka Mody (2011): "The Demographic Dividend: Evidence from the Indian States," IMF Working Paper, WP/11/38, International Monetary Fund.

Azim Premji University (2018): "State of Working India," https://cse.azimpremjiuniversity.edu.in/wp-content/uploads/2019/02/State_of_Working_India_2018-1.pdf.

Bloom, David E (2011): "Population Dynamics in India and Implications for Economic Growth," PGDA Working Paper No 65, Working Paper Series, Program on the Global Demography of Aging, https://core.ac.uk/download/pdf/ 6494801.pdf.

Dahlman, Carl J (2010): "Education and Growth of Services," The Service Revolution in South Asia, Ejaz Ghani (ed), New Delhi: Oxford University Press, pp 261–312.

Department of Industries (2016): "Bihar: Industrial Investment Promotion Policy, 2016," Government of Bihar, http://www.indiaenvironmentportal.org.in/files/file/Bihar-Industrial-Investment-Policy-2016.pdf.

— (2017): "Bihar Start-up Policy, 2017," Government of Bihar, https://www.udyogmitrabihar.in/docs/policies/start-up-policy-2017-eng.pdf.

Ghani, Ejaz and Homi Kharas (2010): "The Service Revolution in South Asia: An Overview," The Service Revolution in South Asia, Ejaz Ghani (ed), New Delhi: Oxford University Press, pp 1–32.

Ghose, Ajit (2014): "Manufacturing-Led Growth in India," paper presented at 'Make in India' Symposium on "Make in India: Towards a Strategy for Manufacturing-led Growth and Job Creation in India," Institute for Human Development, New Delhi, 29 November.

Government of Bihar (2017): "Economic Survey 2016–17," Finance Department, https://openbudgetsindia.org/dataset/c64e1b53-cdf2-4bf9-b8fc-4aa314d5e406/resource/7503e342-524a-4490-99a4-a488979d7c63/download/economic-survey-2017-en.pdf.

GoI (2015): "What to Make in India? Manufacturing or Services?" Economic Survey 2014–15, Government of India, https://www.indiabudget.gov.in/budget2015-2016/es2014-15/echapvol1-07.pdf

Hardoy, Jorge E and David Satterthwaite (eds) (1986): Small and Intermediate Urban Centres: Their Role in Regional and National Development in the Third World, New York: Routledge, New York.

Joe, William, Atish Kumar Dash and Pradeep Agrawal (2015): "Demographic Transition, Savings and Economic Growth in China and India," IEG Working Paper no 351, Institute of Economic Growth, New Delhi.

Krishnamurty, J (2015): "Tackling India's Shrinking Youth Bulge," Financial Express, 21 January, https://www.financialexpress.com/opinion/tackling-indias-shrinking-youth-bulge/32738/.

Mahadevia, D and S Sarkar (2012): Handbook of Urban Inequalities, New Delhi: Oxford University Press.

Majumder, Rajarshi (2013): "India's Demographic Dividend: Opportunities and Threats," MPRA Paper No 46880, Munich Personal Re PEc Archive, https://mpra.ub.uni-muenchen.de/ 46880/.

Mehrotra, S, J Parida, S Sinha and A Gandhi (2014): "Explaining Employment Trends in the Indian Economy: 1993–94 to 2011–12," Economic & Political Weekly, Vol 49, No 32, pp 49–57.

Minocha, A C and Hanuman Singh Yadav (1989): Small and Medium Towns and Their Role in Regional Development, Malwa: Gian Publishing House.

MoSPI (2008): "All India Report of Fifth Economic Census," Ministry of Statistics and Programme Implementation, New Delhi, http://mospi.nic.in/all-india-report-fifth-economic-census.

— (2016): "All India Report of Sixth Economic Census," Ministry of Statistics and Programme Implementation, New Delhi, http://mospi.nic.in/all-india-report-sixth-economic-census.

Office of the Registrar General and Census Commissioner (2001): "Census Data 2001," Ministry of Home Affairs, Government of India, https://censusindia.gov.in/2011-common/census_data_2001.html.

— (2011): "Census of India 2011: Provisional Population Totals, Rural–Urban Distribution, India," Paper 2, Vol 1, Ministry of Home Affairs, Government of India, https://censusindia.gov.in/2011-prov-results/paper2/data_files/india/paper2_1.pdf.

Pradhan, Kanu Charan (2012): "Unacknowledged Urbanisation: The New Census Towns of India," CPR Urban Working Paper 2, Centre for Policy Research, New Delhi.

Rodgers, Gerry, Amrita Datta, Janine Rodgers, Sunil K Mishra and Alakh N Sharma (2013): The Challenge of Inclusive Development in Bihar, New Delhi: Institute for Human Development and Manak Publications.

Annexures

Table A1: Number of Towns and Population Shares in Bihar, 2001

Town Class	Number of Towns	Percent of Towns	Population	Population Share (%)
Class I (1,00,000 and above)	19	15.8	51,44,150	59.3
Class II (50,000–99,999)	16	13.3	11,86,294	13.7
Class III (20,000–49,999)	65	54.2	20,50,588	23.6
Class IV (10,000–19,999)	17	14.2	2,80,820	3.2
Class V (5,000–9,999)	3	2.5	19,948	0.2
Total	120	100	86,81,800	100

Source: Office of the Registrar General and Census Commissioner (2001).

Table A2: Number of Towns and Population Shares in Bihar, 2011

Town Class	Number of Towns	Percent of Towns	Population	Population Share (%)
Class I (1,00,000 and above)	26	13.1	67,55,370	57.5
Class II (50,000–99,999)	28	14.1	18,29,,820	15.6
Class III (20,000–49,999)	76	38.2	2539,376	21.6
Class IV (10,000–19,999)	22	11.1	3,34,484	2.8
Class V (5,000–9,999)	38	19.1	2,64,276	2.2
Class VI (less than 5,000)	9	4.5	34,690	0.3
Total	199	100	1,17,58,016	100

Source: Office of the Registrar General and Census Commissioner (2011).

Table A3: Groups of Activity Identified

Activity Code	Description	Brief Description of Group Activity
1	Handloom/cloth/textile/saree/readymade garment/cut piece	Clothing
2	Tailors	Tailors
3	Wooden furniture and saw mill	Wood products
4	Kirana/grocery/general stores/crockery/sports goods + jewellery/gold/silver/watch + optical	General Stores
5	Furniture (steel)/trunk house + gate/grill-making + metal products	Steel products
6	Medical hall/medicine shop/X-ray + hospital/nursing home	Medical
7	Book and stationery stall + xerox/binding + printing press	Books
8	Hotel/restaurants/bakery/caterers + ice/ice cream factory + biscuit/dalmut (savouries) factory + paan (betel)/tobacco/wine/tea shop	Food and beverages
9	Agro-processing industries (oil, rice/dal/besan [gram flour], chura [flattened rice], atta [flour])	Agro processing
10	Electrical/electronics	Electrical and electronics
11	Cyber cafe/computer services/music store/compact disc/mobile sale and repair + studio/videography	Computer/mobile services
12	Automobile/motor/auto showroom + auto repair and services/sales/garage/cycle/motorcycle repair/rickshaw repair/spare parts/tyres + battery + engineering workshop + transport services	Transport-related sales and services
13	Hardware/agro parts/tractor/tiles	Hardware, tractor, and tiles
14	Household industry/udyog+ bidi-making/agarbatti (incense) making/candle-making + handicraft/sikki grass products + shoe/leather/rexine-making	Household industry and handicraft
15	Painting/art product	Art and painting
16	Institution/coaching centre/non-governmental organisations/advertising and marketing agency + financial institutions	Institutions
17	Beauty parlour/salon/hair cutting/gym + travel agency/courier services/security agency + tent house + drycleaners	Services
18	Miscellaneous (petrol pump + cinema hall + cement/coal/gas dealer + brick kiln + real estate/concrete + gul udyog (charcoal briquettes) + seed/fertiliser/pesticide/kisan kendra (farmer's centre) and poultry	Miscellaneous
19	Plastic product	Plastic

Source: Prepared from the list of enterprises obtained from the Department of Industries, Government of Bihar.